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LOS ANGELES NEW WATER SUPPLY

Sources of Supply for Aqueduct—Owens River Fed by Streams and Springs—Supply Uniform and Pure—Supplemented by Artesian Wells—Quality of the Supplies

By Burt A. Heiny

THE plan and construction of the Los Angeles aqueduct have invited the interest and admiration of the engineer and layman generally throughout the United States both from the great distance—240 miles—that the water is to be carried into the city and the unusual obstacles that have presented themselves. The spectacular and novel methods of building the conduit across the Mojave desert, tunneling mountain ranges and bridging chasms naturally have received the most attention from technical and popular writers. The quality and the quantity of the water have been generally overlooked. For instance, it is not commonly known that Los Angeles, after going so far for her water supply, will not depend entirely upon the flow of the Owens River and its tributaries, but will have in addition a very dependable supplementary supply from a large artesian area in the Owens Valley, where a number of wells have been bored. It is the purpose of this article to discuss briefly these two features. The final acquisition of approximately 25,000 acres of artesian lands from the United States Government now makes it possible to discuss this feature of the project.

The principal diversion, of course, is the Owens River at a point in the Owens Valley 11 miles north of the town of Independence, Inyo County, California, and at an elevation of 3,812 feet.

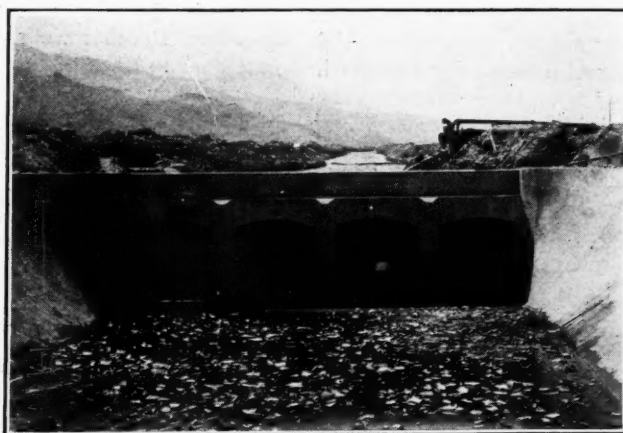
The Owens Valley in shape is long and narrow, with a northwest-southeast trend. From the Mono divide, where the Owens River has its rise, to the southern end of Owens Lake is a distance of 120 miles. The total area of this valley, with its mountainous drainage area, is about 3,300 square miles, of which 1,200 square miles are desert mountains that have no appreciable run-off. The elevation of the valley ranges from 3,570 feet at its southern end to 8,000 feet at its northern terminus. The White and Inyo Mountains with an elevation of 10,000 feet form the eastern wall of this comparatively narrow and deep valley, but are robbed of their moisture by the Sierra range, to the west of the valley, which supplies the drainage. The crest of this latter range averages 12,500 feet; Mt.

Whitney, the highest peak in the United States, attaining an elevation of 14,502 feet, while many others have an elevation of 14,000 feet. The eastern face of this range drops precipitously to the valley floor at a rate of from 1,500 to 2,000 feet per mile, and from deep canyons the streams debouch upon high alluvial cones. The porous cones absorb much of the run-off of these mountain torrents, so that only a small part of the run-off of the drainage area reaches the Owens River directly. In other words, Nature has formed of the Owens Valley a subterranean reservoir on a mammoth scale. To the south of Owens Lake the rise of the bed rock almost to the surface cuts off any possible outlet. It is a water tight basin receiving its supply from precipitation, storing it up in detritus gravels of unknown depth and giving it off only by evaporation and transpiration. The valley is an artesian area almost perfect in its formation.

The Owens River, fed by 40 streams, many springs and subterranean percolation, follows the lowest line of the valley and empties into the Owens Lake, a body of alkaline water without an outlet.

As has been stated, the White and Inyo ranges are negligible in estimates of rainfall, but westward from the Owens River to the summit of the Sierra the precipitation is one dependent upon the topography. At the point in the river where the flow is diverted into the aqueduct, the annual precipitation does not exceed four inches. From here, as we climb the slopes of the Sierra, the annual rainfall gradually increases at the rate of about forty-seven hundredths for every 100 feet of elevation, until at the crest of the range it reaches a maximum of from 30 to 40 inches.

The foregoing will give in briefest form an idea of conditions which are to be met only where a water supply is to be obtained from a stream traversing a long and narrow district practically arid in character. Even after the most persistent campaign of education, the Los Angeles Water Department must contend with a certain element of the citizens which still maintains that the Owens River and its tributaries cannot furnish the maximum



AQUEDUCT INTAKE AND GATES.

20,000 miner's inches (approximately 258,000,000 gallons daily) for which the aqueduct has been designed.

The study of the hydrography of the valley, carried on jointly by the United States Government and the municipality for nearly nine years, has been the most exhaustive and painstaking investigation of a district's water resources ever undertaken. In this investigation much invaluable knowledge has been added to that already developed by hydrographic science. For the past five years the work has been carried on by H. C. Lee and a staff of assistants reporting both to Mr. Mulholland, chief of the aqueduct engineering staff, and to the Government headquarters in Washington.

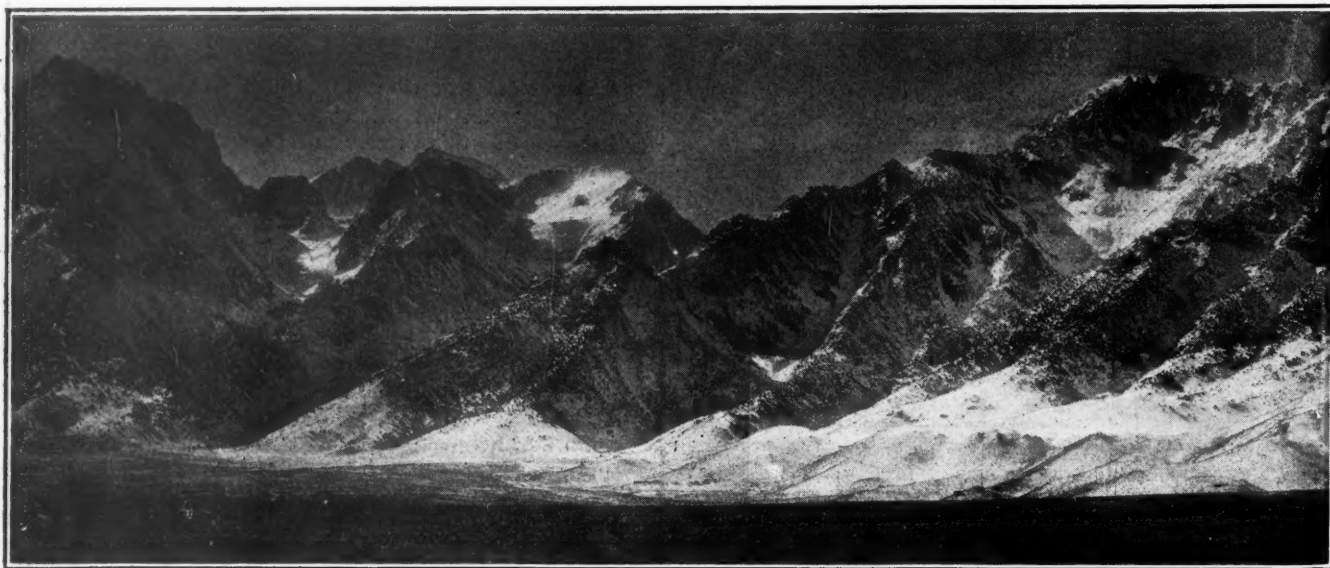
Of all the streams of the Sierra, the Owens River is the least variable in its flow. Whereas the flood flow on an average will not exceed its minimum flow by more than ten times, the Kings River, for instance, at its peak will exceed its minimum flow by more than one hundred times. And so likewise the Kern, these two streams draining the western face of the Sierra and the latter's flow being now

regulate the flow southward through the aqueduct, which is designed to carry 21,500 miner's inches, which provides a most liberal allowance for all seepage and other losses between the Haiwee reservoir and the city.

Now, disregarding the storage and equalizing intent of the Haiwee reservoir, the city, with its artesian resources in the valley, is amply able to more than make up any temporary deficiency in the river's flow.

These resources cover more than 60 square miles of artesian lands, purchased piece-meal from ranchers who had no knowledge of the artesian possibilities of the property, and finally by the acquisition in the latter part of last month of 25,000 acres of land from the United States Government at a price of \$1.25 per acre. For these reasons the city for some years has been a steady purchaser of lands along certain defined lines within the valley, but at no time has this been dwelt upon, or attention called to the investigations which had determined these purchases.

From the first, it was the theory of Wm. Mulholland, the chief engineer, that the Owens Valley was a large sub-



VIEW OF ONE HUNDRED MILES ALONG THE EASTERN FACE OF THE SIERRA.

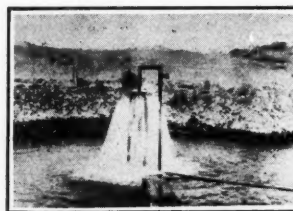
utilized in large measure for hydro-electric development.

There are two seasonal periods when the Owens River, twice within the past nine years, has carried a smaller volume of flow than the 20,000 miner's inches that represents the net delivering capacity of the aqueduct. These seasonal periods are well known and have been amply provided for. One occurs in April and this season the gages registered as low as 18,500 inches for a brief period. The explanation is this: By April, spring is far advanced in the arid valley at the foot of the towering Sierra; irrigators are already watering their fields and drawing upon the Owens River above the intake for their supply. But in the high reaches of the mountains winter still locks the streams in ice. By the end of May the snow commences to melt. This is almost immediately followed by a sharp rise in the Owens River which continues to the end of August and encompasses the period of heaviest consumption in the Pacific coastal plain wherein Los Angeles is situated. During this interval, from 50,000 to as high as 170,000 miner's inches are carried. By October it again reaches its minimum flow, ranging from 17,500 to 30,000 miner's inches, depending upon whether it has been a wet or dry year in the higher ranges, and this it maintains until the next April.

To provide a steady flow through the aqueduct, the first 60 miles of the water course is designed to carry 45,000 miner's inches, the surplus being stored in the Haiwee reservoir. This important feature of the project, with a capacity of 26,000,000,000 gallons, provides the storage and clarification of the spring freshets and likewise serves to

terranean reservoir, similar in all respects, but larger and better in all details, than the subterranean reservoir of the San Fernando Valley which forms the present supply of the city and had been familiar to him more than 30 years.

Quietly, an investigation to prove or disprove his theory was begun. A well rig was shipped into the Owens Valley and drilling was started. When a depth of 550 feet was reached, a well that flowed 900,000 gallons per 24 hours was brought in. Then, in a north and south line with the valley, parallel and contiguous to the aqueduct but slightly higher in elevation, so that there is a gravity flow into the aqueduct, 10 other wells were bored at a distance of half a mile apart. Each of these on being "brought in" carried a flow that averaged 1,000,000 gallons daily, the water being of the highest purity. By lifting the water by compressed air, using for the purpose compressors driven by electric power generated by the city's hydro-electric plants in the valley, Mr. Mulholland found that the capacity of each of



Natural Flow.



Using Air Lift.

ARTESIAN WELL IN OWENS RIVER VALLEY.

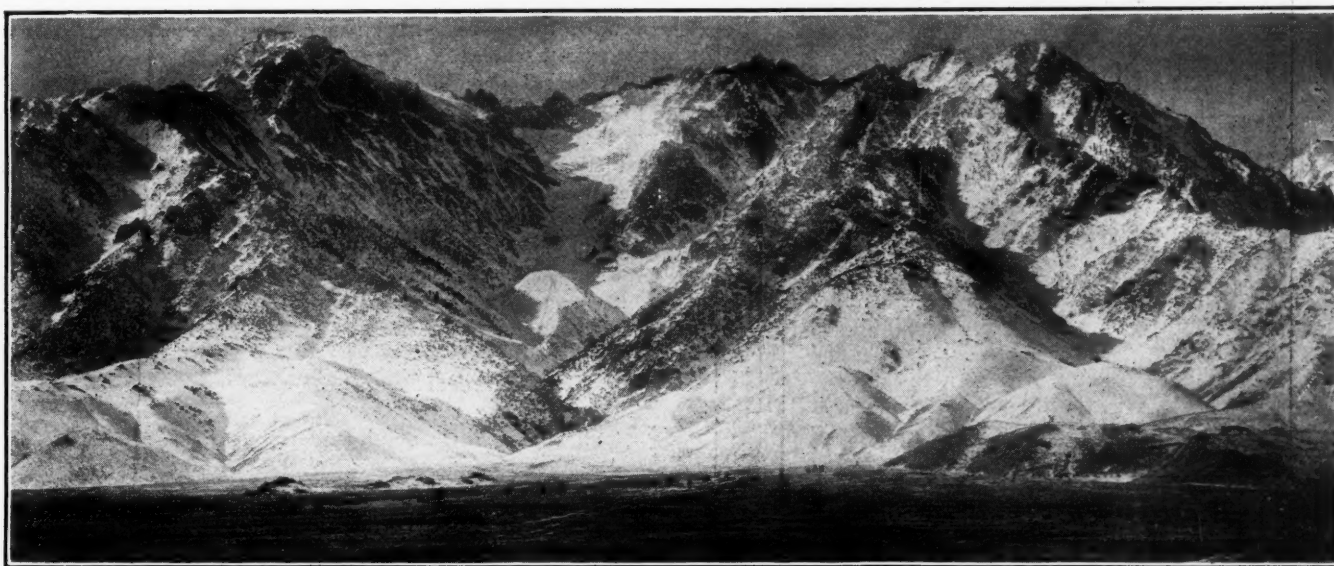
these wells could be easily doubled. All of the wells are of the California "stove pipe" variety, consisting of a 12-inch casing driven down and perforated at the bottom. As the work continued, the wells were tested and capped and, the district having been sufficiently prospected and proved, the city's land agent followed in the wake of the drillers.

No matter how long the period of drouth in the Sierra, aqueduct engineers see in this artesian supply ample protection from any possible famine; and as such, even if it should be necessary to use water from this source only once in half a century, its value is beyond computation.

The sanitary conditions can be dismissed in a sentence. Los Angeles has no conditions confronting her such as New York faced in the Catskill Mountain aqueduct project. The Owens Valley is sparsely inhabited; the major portion of the watershed has been included within the Government Sierra forest reserve and no fear of human contamination need ever be felt. Traversing the Haiwee reservoir, the water will be taken out sterilized and free from sedimentation even in time of the spring freshets; and after leaving

sign for a good, efficient name plate for uniform use. Neither of these two proposals was definitely adopted, but the representatives of the municipalities agreed to report to their councils and to meet the institute again. Many of the delegates were afraid of involving their councils in heavy expense, but, as far as the members of the institute are concerned, they do not advocate an ornate or elaborate name plate; their view is that, if it is simple and thoroughly efficient for its purpose, it will be sufficiently artistic.

Another suggestion which was mooted at the conference was the desirability of a more general display of street name plates. Most people who have visited Paris have admired the thoroughness of the system by which the names of the streets are exhibited on plates of uniform design at every corner of every street and of the intersection of streets. This suggestion, however, met with a colder reception than the first, and the representatives of some of the poorer boroughs intimated that the cost entailed was more than their councils would approve.



WHICH FORMS THE WATER SHED OF THE LOS ANGELES SUPPLY. PHOTOGRAPH TAKEN IN NOVEMBER.

this reservoir, with the exception of the short exposure in the Fairmont reservoir, will not again see daylight until it is drawn from the faucet of the consumer.

The mineral content of the water is larger than that of the waters of the eastern States, but it is not nearly as large as that of the water now served the city. This latter water has a mineral content ranging from 27 to 32 grains per United States gallon, whereas the new supply from the Owens Valley will have a mineral content averaging only about 17 grains per United States gallon.

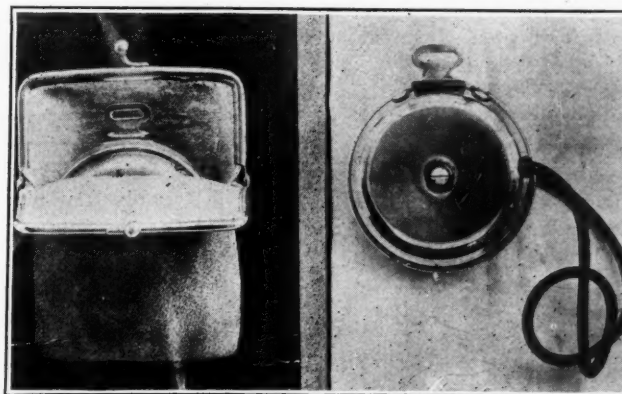
LONDON STREET NAME PLATES

THE present great diversity of the street name plates in London was discussed at a conference held at the Royal Institute of British Architects. Members of borough councils in nearly every part of London attended, and there was a free interchange of views with the architects present. It was generally agreed that some uniformity of treatment is desirable. Some of the London street name plates are cast iron, many are enameled iron, others are of zinc or tile; but the most common system of all, and the most objectionable in the view of the institute, is to paint the name of the street on the bricks of the house. It is quite a frequent occurrence, as was mentioned at the conference, for the painter, when the name fades, to paint out the old name and then put in wrong spelling.

The type of plate most generally favored was one of plain cast iron, with raised letters in old roman type. The suggestion was also made, and met with considerable approval, that a competition should be promoted for a de-

A GERMAN POLICE TELEPHONE

A VERY convenient police telephone system has been brought out by a Berlin firm, which is intended for use more especially in the outlying quarters of town, so as to aid in solving the problems of giving good police protection in these districts. A small pocket telephone is carried by the policeman, consisting of a transmitter and a separate receiver, which are put together in the form of a watch. When used, the two pieces are taken apart and the transmitter is fitted into the wall post. Such posts are spaced along the street at 1,000 or 1,200 feet, and consist of a small cast iron box with hinged door, the policeman



POCKET TRANSMITTER AND RECEIVER.

opening it with a key. Inside the box is a hook for hanging the pocket transmitter, while the receiver is held to the ear, and this gives connection with the district office. The cable leading to the box is well protected from damage by an iron piping so that the whole is not likely to suffer, and the box is also waterproof.



GERMAN POLICE TELEPHONE.

In the police office is a small telephone set which connects with the street posts, and it has an annunciator drop on the front so as to make contact for an electric bell. Where several lines come into the office there is used a small distributing box with several drops. The attendant can thus plug in the proper line to the telephone wherever this may be located, either in the same office or to connect with other police offices or headquarters. Connection can also be made through the office between any two of the street posts. About 40 or 50 posts are used on an underground cable, or the line can be mounted overhead and brought down through iron piping. In public parks the boxes can be placed upon trees or lamp posts and overhead wiring used.

CINCINNATI TRAFFIC REGULATIONS

AN ordinance has recently been introduced in the council of Cincinnati, O. (but not yet passed, we believe), which offers a suggestion for removing one of the dangers of rush hour traffic in large cities, although by the adoption of traffic regulation even more stringent than that which has been objected to in several cases. The proposed ordinance specifies certain corners where the greatest number of people enter and leave the trolley cars during rush hours and provides that between 5.15 and 6 p. m. all vehicular traffic is to be prohibited at those points. The object of this is both to permit the more rapid loading and unloading of the cars and to remove the danger caused by the passing of automobiles and other vehicles while passengers are passing between the street car and the sidewalk.

Among certain other rules proposed are the following:

In the congested district pedestrians must not cross streets diagonally, but only within the lines of the intersecting sidewalks projected. No vehicle is to be left standing in front of, or within 25 feet of the entrance to, any church, theater or office building three stories or more in height. No vehicle is to be permitted to load or unload freight in the street between 9 a. m. and 7 p. m., when there is a practical alleyway to reach the building. Drivers of public or business vehicles must be at least 18 years old.

PRINCIPLES OF EFFICIENCY

Six Altruistic and Six Practical Principles—Definitions of Each and Application to Municipal Work

IN a paper before the American Water Works Association, Harrington Emerson discussed at considerable length the principles of efficiency as applied to water works. Space does not permit us to reproduce this paper, but a few of the more salient ideas and principles are given in abstract herewith.

"General principles fall into two classes, the altruistic principles and the practical principles. The practical principles are those underlying scientific management; the altruistic principles are those underlying industrial righteousness. The highest efficiency depends on both righteousness and management.

"The altruistic principles of efficiency are six:

1. Ideals.
2. Common sense and judgment.
3. Competent counsel.
4. Discipline.
5. The fair deal.
6. Efficiency reward.

"The practical principles are also six:

1. Records—immediate, reliable and adequate.
2. Planning and despatching.
3. Standards.
4. Standardized conditions.
5. Standardized operations.
6. Written standard practise instructions."

Mr. Emerson then proceeded to define each of these twelve principles and give illustrations of their meaning and application. The Ideals of a business, he said, affect its entire organization, its employees and its relations to other corporations and individuals. "The main or chief ideal for a water works system, since life itself is involved, is safety * * * meaning pure water—not necessarily limpid, but free from disease germs. * * * Other ideals are abundance, continuity of service, comfort, economy. * * * Abundance, both to the purveyors of water and to the consumers, is considered a license to waste. Efficient management cannot accept this construction, for its object is the elimination of all waste, whether of material things or time of men and equipment." Under comfort he included a cool, clear and tasteless supply.

Common Sense controls the application of the other principles. "As to water works, for example, common sense is necessary to reconcile the different ideals—an abundant, but turbid supply as against a smaller but limpid one; or an abundant but expensive supply as against a smaller but cheaper one. * * * Common sense generally means a compromise, but the compromise should be deliberate."

"Competent Counsel should be sought from all sources. The time to secure it is before money is spent, not afterwards. * * * Counsel is usually not to advise us what to do, but to advise us what not to do."

Discipline. "When through political power the head of a water department cannot discipline its chief engineer, when the latter has the whip hand, how can co-operation,

economy, efficiency be expected? When experts place in the hands of authorities proof of inefficiency, but politics, the lack of discipline, results in the reports finding a speedy path to the waste basket, who can expect low operating costs?"

The Fair Deal, in so far as it applies to the relation of the management with the men, "is, with efficiency reward, one of the prime bases for that co-operation which alone assures permanent high efficiency. The latter is the only hope (and even that may not avail) for the public service corporation against the unfortunate feeling which the abuses of some utility corporations have brought upon all in that class. * * * A metered water supply is distinctly the fair deal to company and consumer, while unmetered waste is not."

Efficiency Reward "demands that each man shall be compensated in proportion to his efficiency. * * * Bonus and differential piece-rate systems are two particular methods of giving this efficiency reward."

Under the head of Records—reliable, immediate and adequate, Mr. Emerson said: "It is common experience that it is not very difficult to get some sort of records kept reliably; that it is more difficult, however, to get reliable records that contain *all* the information desired, and that it is tremendously more difficult to get reliable and adequate records immediately. The immediate record, which tells you costs the day after the occurrence, is rare, but it is obtainable under average conditions and such is the record that efficient managers should insist upon. * * * The hoary instance of an old foreman carrying the valve locations, the size and history of the mains under his hat is too old to warrant elaboration."

Planning and despatching mean less to a water works than to a factory, but would apply to the doing of repair work, overhauling of machinery, washing of boilers and other operations in the pumping station and to all street work. "A careful grouping of the jobs, proper assignment of gangs and intelligent supervision would result in eliminating much lost time in going from one job to the other. * * * Where you do your own construction work the opportunity in this connection is golden."

"Standards are the keystone of efficient management. By them efficiency is measured, for *efficiency is defined as to relation between actual achievement and an equitable standard.* * * * How can you measure the value of your coal until you have standard units—the pound for weight, the B. T. U. for calorific value? * * * How can you judge of your pipe laying until you have a standard—the number of feet per day per man (varying it, of course, for size of pipe, depth of trench, men in gang)? * * * Having efficiency records—use them. Tie up with efficiencies, whenever possible, and efficiency reward, thus creating an incentive for the men to get better results. Pay a bonus to foremen and superintendents on the average efficiency of the men under them. Then it is to their financial interest to teach their men the more efficient ways that have been devised, or if the men are unsuited to the work, to have them transferred to other work for which they are suited and on which they can attain high efficiencies."

Standardization of conditions is defined to be "the improvement of all plant equipment, tools, buildings and all other conditions, so that equipment and men have everything favorable to maximum output—to standard efficiency." Under this head the author included metering of all services, the keeping of boilers, pumps, etc., at their highest excellence.

Standardized operations was described as meaning the obtaining of perfect working under standardized conditions, such as teaching the best method of stoking and seeing that it is followed, and doing the same with the lowering, setting, calking and back filling of pipe.

"Having determined the conditions favorable to maximum production and the quickest and easiest way of performing the operations, having set standards, installed proper records and a planning and despatching system, all these are described in written instructions, which become the codified law of the industry and prevent any man from walking out with the only record (a mental one) of vital data under his hat and so crippling the plant."

LEAKS AND CONSUMPTION RECORDS

Illustrations of Water Consumption from American and English Records—Separately Recording Domestic and Trade Consumption

Abstract of a paper before the American Water Works Association, by
— EDWARD S. COLE.

WATER WORKS leakage may be classified as follows:

In pumping plants: (a) Plunger leakage; (b) valve leakage; these being known as "slip."

In the distribution system: (a) Underground leakage from mains and services; (b) house fixture leakage—defective plumbing; (c) misuse to save ice in summer or to prevent freezing in winter; (d) steals by large metered consumers.

Almost every water works manager contends with some or all of the above classes of leakage and he must do one of two things—either allow the leaks to continue at whatever cost, or spend time and money in stopping them. Evidently either alternative is expensive and the conscientious official wants to know which will cost him least.

In a pumping plant we should first know the pump-leakage. If tests show 15 per cent., as in Chicago, and we assume that well made pumps should operate with a slippage under 5 per cent., then there is a loss of pump capacity, steam and fuel of fully 10 per cent., which under Chicago conditions costs \$35,000 yearly for coal alone.

Probably the most serious loss involved in pump slippage is that of fire capacity, especially during hours of maximum draft. The neglect of pump-leakage has in many cities led to the purchase of additional machinery and boilers long before such extensions were really needed. In this way are incurred unnecessary fixed charges which may also be considered as part of the cost of leakage.

By the courtesy of W. A. McFarland, superintendent of the Washington, D. C., Water Department, Mr. Cole was able to present the following analysis of 2,600 underground leaks which had been found by him prior to October 28, 1911:

1,373 service pipe leaks.....	13,669,000 gallons daily
607 main joint leaks	8,076,000 gallons daily
620 miscellaneous leaks	5,520,000 gallons daily

Total 2,600 leaks 27,265,000 gallons daily

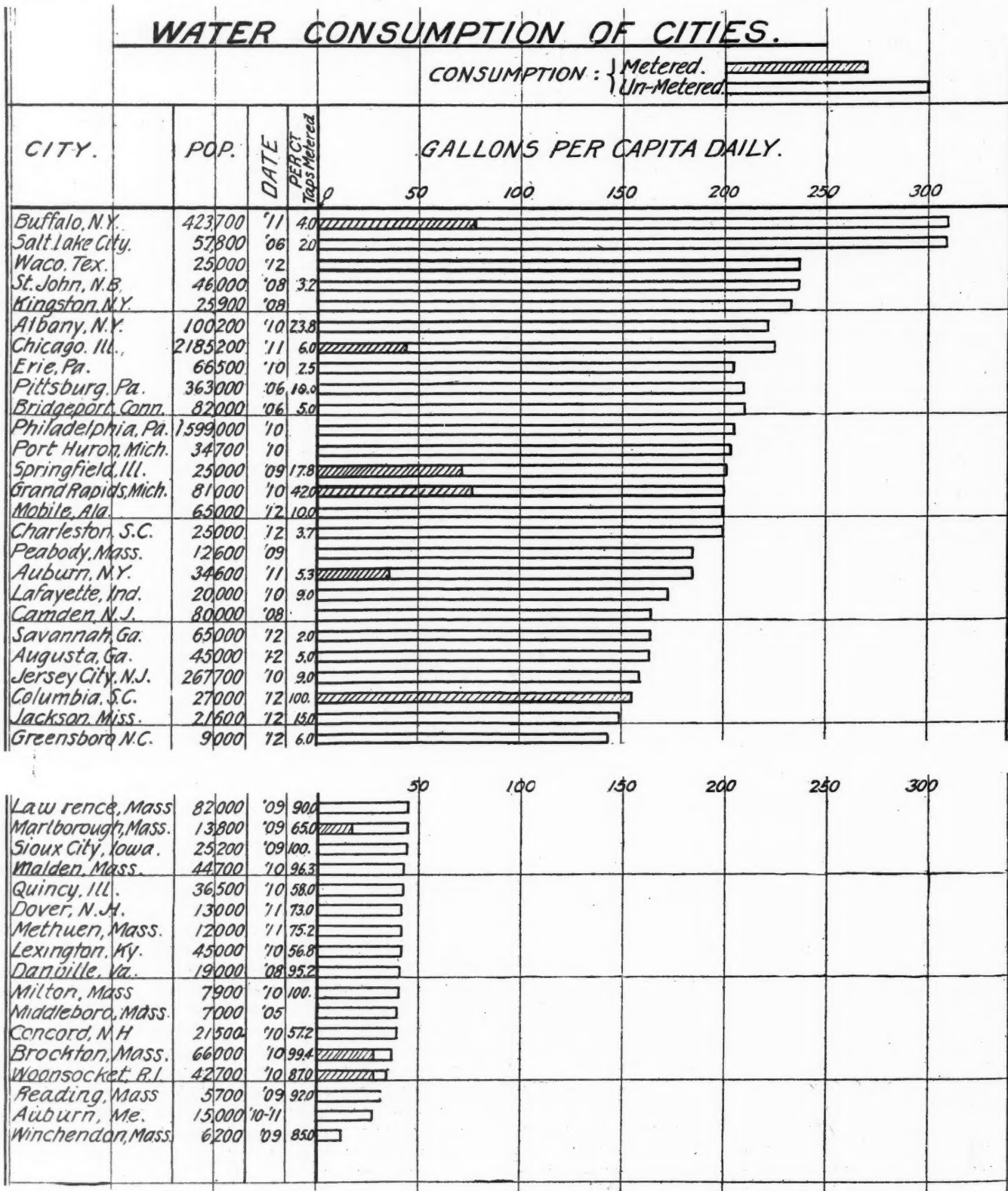
The author cited the case of Chicago, where water survey engineers have found that the pumping plant handles more than twice as much water as reaches the consumers, and considers that the following advantages would accrue from the elimination of leakage: First, saving about one-half the fuel. Second, increasing pressures by reduced friction loss. Third, producing reserve capacity for future growth, thus postponing needed extensions. The last item he considered to far exceed all the others in its importance in the finances of the plant.

To illustrate the great variation in total use by the different cities of the country, Mr. Cole presented a diagram showing graphically the consumption in 166 American cities, of which we present a part herewith showing those of maximum and those of minimum consumption. He also presented a table of consumption in the larger British cities in the year 1911 in which domestic and trade were listed separately, which table we present herewith.

WATER CONSUMPTION OF THE LARGER BRITISH CITIES.

City.	Population 1911	U. S. Gals. Per Head Daily.	Domestic. Trade, etc.
Aberdeen	163,681	36.	14.4
Accrington	92,000	19.3	6.9
Airdie, Coatbridge	100,000	30.	15.7
Barrow-in-Furness	84,500	32.	22.2
Bath	74,000	22.7	3.3
Belfast	390,000	29.8	15.6
Birkenhead	115,257	29.8	11.3
Birmingham	837,776	17.9	11.4
Blackburn	143,000	16.9	8.9
Bradford	288,505	27.	25.8
Brighton	200,000	30.	8.4
Bristol	379,923	30.4	...
Burnley	105,000	22.3	5.5
Cardiff	236,000	16.9	14.5
Carlisle	56,000	25.7	11.2
Chester	54,000	38.9	8.4
Colne Valley	106,000	25.2	...
Coventry	101,000	18.7	4.3
Croydon	169,559	27.6	6.0
Darlington	55,000	25.2	...
Derby	130,000	19.6	10.0
Devonport	75,000	35.3	15.7
Doncaster	54,188	28.	14.0
Edinburgh and Leith	477,000	33.4	8.4
Exeter	63,000	26.4	9.6
Glasgow	1,134,454	44.5	27.6
Great Grimsby	90,000	24.	8.4
Halifax	110,000	18.	15.6

WATER CONSUMPTION OF CITIES.



PART OF AUTHOR'S DIAGRAM SHOWING WATER CONSUMPTION IN AMERICAN CITIES

Huddersfield	152,000	19.2	12.
Hull	246,435	36.4	12.5
Ipswich	76,600	19.9	6.2
Leeds	490,985	23.4	1.5
Leicester	282,905	16.0	7.4
Lincoln	60,500	22.	7.0
Liverpool	958,446	22.4	13.3
Manchester	1,200,000	24.	18.
Merthyr Tydfil	90,000	31.2	15.6
Metropolitan Water Board (London)	7,079,251	37.4	...
Newcastle-on-Tyne	585,000	19.5	16.2
Northampton	120,000	15.2	3.7
Oldham and District	231,787	19.2	9.6
Oxford	60,000	28.8	4.8
Plymouth	136,568	34.1	...
Pontypridd	125,000	34.8	4.8
Preston	130,000	30.0	16.8
Reading	97,877	24.9	14.4
Rochdale	125,000	18.	6.0
Rotherdam	100,000	17.3	6.2
St. Helens	90,000	25.2	15.6
South Hants District	97,415	24.8	...
South Staffordshire	701,505	19.7	5.4
Staffordshire Potteries ...	320,000	19.2	7.2
Stockport	170,000	21.6	6.0
Sunderland and S. Shields	425,000	16.8	7.2
Swansea	120,000	42.6	12.3
Swindon and District	56,000	13.1	...
Tees Valley	260,000	20.	50.4
Wigan	95,221	19.5	6.7
Ystrad	75,000	23.4	34

This matter of separately ascertaining and recording the domestic consumption and that used for manufacturing and trade purposes is one which he particularly emphasized, and following his paper a committee was appointed to take what action seemed practicable towards having water works departments and companies throughout the country report these two classes of consumption separately, so far as it is possible for them to make any distinction. Mr. Cole discussed this subject as follows:

It is reasonable that we should ask ourselves why there is this great variation among our American cities and between American and English cities in the use of water. The per capita consumption in this country is almost invariably reported as the total use. We lump together indiscriminately, public use, business use and domestic use, which is obviously unfair if comparisons are to be made. In England, on the contrary, the water consumption is usually reported for domestic as distinct from other uses.

It is evident that the water used for trade purposes in all British cities is small compared with the few available records of manufacturing use in American cities, but I believe that domestic consumption in English cities is not so much lower than it is in many of our own metered cities, if only we will separate domestic consumption from all other use.

A movement should be started in this country to provide the much needed segregation of use in our water works reports, and it is to the interest of all water works men that this data should be forthcoming as rapidly as possible. Our water works literature is rich in meter statistics and these tend to show that domestic consumption in this country need not exceed an actual use of about 30 to 60 gallons per capita daily. Indeed, meter readings prove conclusively that the poorer sections of our American cities are using as little as 10 to 15 gallons per capita. We must recognize that there are a few lavish users among the wealthy class in any city, having extensive grounds on which the sprinkler is in continuous operation and having an elaborate supply of house fixtures, but it must be remembered that this extravagant class is exceedingly limited in number and probably has little effect upon the average use of our large cities. Of course, we must expect to find greater economy in the older countries of Europe, which long ago felt the pinch of a diminishing water supply such as we are likely to experience in our turn when population has become as dense.

Do not let us deceive ourselves by the use of unfair statistics. It is absolutely necessary to know how we compare in domestic use after deducting water for all other purposes. I would make a most earnest plea that water works men report even approximately such figures as will help us separate domestic from business use of water. This information would be valuable to every water works man, giving him for the first time the means for demonstrating efficient management and for pointing the way to increased economy through intelligent comparison.

According to such figures as we have, there are 20 American cities showing a per capita daily use for business purposes of from 3 to 70 gallons, most of them using from about 30 to 40 gallons. With this allowance in mind, it is interesting to examine our American list, and note that many domestic rates comparable with those of the English cities would remain, after deducting this amount of business use from the totals reported. Of course, any such comparisons must be made with care, for business use may vary from nothing in the residential town to a large part of the entire supply in manufacturing centers.

This discussion of reasonable per capita consumption is presented merely as a basis on which to determine whether or not there are excessive leaks in a given city. Without some such basis many a city is operating wastefully without knowing the truth.

Metered cities are fortunately placed for such an analysis and it would be an easy matter for them to arrive at this necessary basis for comparison. In the fully metered city it is possible to compare the total pumpage or supply with the total registration of all meters. The amount remaining "unaccounted for" is, of course, the most reliable criterion of leakage which it is possible to obtain. Occasionally we find a city with practically every service metered, but accounting for only 50 per cent. or 60 per cent. of its total supply. The manager of such a plant should entertain no delusion as to the efficiency of his administration. Either he has underground leakage or there is stealing from his main—and the one costs as much as the other. The question—does it pay to stop leaks?—answers itself.

ULTRA-VIOLET RAY STERILIZING

Laboratory experiments which have been made at Paris and other places in Europe, have showed that the rays given off by the mercury vapor lamps are very effective in destroying bacteria. After this was a well-established fact, the next step was to apply the principle for sterilizing purposes, and especially for purifying water. A mercury vapor lamp with quartz tube must be used here, as a glass tube cuts off the powerful ultra-violet rays, which have the effect of destroying the bacteria. Small water purifiers have already been designed on this principle and are even being placed on the market. Inventors are also



ULTRA-VIOLET RAY APPARATUS.
Quartz tube shown suspended from removed cover.

engaged on the question of a water purifying apparatus of large size, which can be applied in city water plants so as to purify the water in the mains. One advantage of this method is that an apparatus of the kind is of small size and very convenient to install, so that no cumbersome or expensive plant is required.

We illustrate one of the first apparatus of the kind which has been brought out in France, and which is said to have proved to be very effective during the tests made at the Pasteur Institute and other official establishments. Seine water heavily charged with bacteria was found to be entirely sterilized, according to the official reports. The apparatus shown is designed for an output of 25,000 gallons per hour. It consists simply of a sheet iron cylinder having a number of mercury vapor lamps mounted in the center and spaced along the length so that the water comes in close contact with the lamps. Sheet iron guides serve to direct the water around the lamps, so that the rays act at short range. Four lamps are used in this type, each mounted on a cover which fits on to a flanged opening so that any one of the lamps is removable at will. Current is taken from the electric light mains, using 110 volts and 12 amperes in the present case.

NEW KIND OF ROAD IN CONNECTICUT

MUNICIPAL JOURNAL,

50 Union Square, New York.

GENTLEMEN:

IN the discussion that was held last winter by the American Society of Civil Engineers on Bituminous Surface Treatment, Mr. A. S. Brainard made reference (MUNICIPAL JOURNAL, May 16, 1912—page 755) to the method of maintenance followed by Commissioner MacDonald in Connecticut. As a matter of fact, this is really more a method of construction than one of maintenance, although perhaps the merit of the system is most strikingly evidenced by the decrease of the maintenance costs.

This plan, put into practise by Commissioner MacDonald some several years ago, is notably different from anything else that has been proposed heretofore, and it is rather remarkable that it has not already received more attention. Theoretically, it consists in building a stone aggregate of proper thickness to stand the weight of the traffic; of binding or compacting this aggregate so densely that the surface shall be free from voids or pores—monolithic in fact—and of then spreading over this surface a water-resistant material of sufficient elasticity, after drying, to withstand the abrasion of both the hoof and tire traffic.

At the first glance it might be thought that the method thus briefly described was not so very different from the surface applications of oil, either with or without an asphalt or tar content, that have been extensively made for some years past with more or less successful results. There is, in fact, however, a vast difference and in this difference lies the entire reason for the success of the MacDonald method.

Under the scheme of the theory, the surface is to be without voids or pores. This so that there shall be absolutely no penetration of the oil, asphalt bearing or not, into the roadbed. In this absence of penetration lies the difference of this method from all of its predecessors, as well as the measure of its success. This overcovering is literally a blanket spread upon the surface of the road. It takes up practically all the wear of the traffic and is to be renewed from time to time. The interval between renewals, one to three years, is dependent upon the quality of the oil and the volume of the traffic, but they must be frequent enough to prevent any abrasion of the stone aggregate, and thin places in this covering must be observed and corrected from time to time.

It must be at once evident to those skilled in the construction of water-bound macadam roads that such a dense, compact and perfectly smooth surface as required for this idea could not possibly be obtained by any of the known methods of construction. In order to obtain it, advantage was taken of the effect that a water solution of glutrin has upon stone. Under the ordinary conditions of wet rolling there is a certain amount of binder created from the stone. The bond thus formed helps to hold the separate pieces in place, but is never great enough in quantity to entirely fill the voids, unless the rolling be continued far beyond the requirements of even the very best practise. If, however, glutrin is added to the water used in rolling, or if glutrin is sprinkled upon the road bed after the completion of the rolling and while the aggregate is still damp, this leaching action of the water is immensely and immediately increased, and a sufficient amount of the natural bond produced

to fill the interstices and thoroughly seal all of the surface openings.

In the Connecticut work, as practically carried on, the water-bound macadam, after completion, is treated with a water solution of glutrin and then given a sufficient time to age or season. This may require from one to four weeks, dependent both upon the quality of the stone and the climatic conditions. Traffic may be permitted during this period. The glutrin makes the road very hard and there is, therefore, but little abrasion. At the end of this seasoning time the surface will be smooth and compact. The general appearance is as though the road were frozen. On a closer inspection it will be found that the new bond has filled up all the interstices and pores and that every bit of the fine stone and dust is firmly bound in between the larger pieces.

On the smooth base formed by this chemically bound aggregate there is now spread the asphaltic oil blanket at the rate of one-quarter to one-half gallon per square yard. There is no dust to form an emulsion and destroy the effect of the oil, nor any seeping between the stones where it might act perhaps as a lubricant instead of a bond. Sand or clay-free fine gravel can be sprinkled over the surface in order to thicken the oil.

The published statistics of the State of Connecticut show a most remarkably low cost of annual repairs on the roads built in this manner. Some of them, notably the Berlin-Hartford road, have had to carry a very heavy traffic. Good examples of these may be seen by starting from Hartford and traveling southward over the Berlin pike to Meriden, then eastward to Middletown and then south and west over the Middletown-Northford road into New Haven. There are also roads lying north of Hartford, but on the route given good contrasting examples of treated and untreated roads can be observed.

Yours truly,

J. S. ROBESON,
President Robeson Process Company.

LOUISVILLE'S CITY LABORATORY

THE Department of Engineering of Louisville, Ky., has recently been installing a complete laboratory for testing all materials used in the public works of the city. It is fortunate in being able to secure a large, well lighted room in the city hall immediately adjoining the other engineering offices. All of the apparatus which has been decided upon has not yet been received, but there are already in place appliances for making all of the ordinary physical tests on cement except that of specific gravity; these, including the Dow needle, laboratory scales, set of screens, briquette molds and testing machine, water pans, etc. At one of the storage yards an old style brick rattler is used, this having been in service for some time. This is run by an electric motor. The abrasion limit for paving brick adopted by the city is 18 per cent. loss.

Asphalt also is tested, and the form used in recording the results of the test give the date, the plant and street from which the sample is taken; the amount of sand, cement and dust used in the mixture; the penetration, mineral matter, specific gravity and ductility. The sand is passed through the several screens from 10 mesh to 200 mesh. The requirements are a penetration of 30 to 50 for Kentucky rock, and .3 to .9 centimeters for other asphalts. Seven per cent. of the sand must pass the 100 mesh screen, 15 per cent. the 80 mesh screen, and 100 per cent. the ten mesh screen.

The report of City Engineer D. R. Lyman for the year 1911 shows samples to have been tested from about 57,000 barrels of Portland cement and asphalt used on 53 paving contracts.

DEVELOPMENT OF A CIVIC CENTER IDEA

IN 1905 the Art Commission of Denver, Colo., advocated a city plan. In January, 1906, it published a "Proposed Plan" by Charles Mulford Robinson, including a great civic center, which was rejected by the public because of its great expense. In the same year the sculptor Frederick MacMonnies suggested another plan for a civic center. This was urged by Mayor Speer, indorsed by the Art Commission, Real Estate Exchange, Chamber of Commerce and other citizen bodies. And this spring the ground for the civic center was purchased and its construction seems assured.

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CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper, either in the form of special articles or of letters discussing municipal matters, are invited and paid for. Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

JUNE 27, 1912.

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Municipal Ownership of Refuse Plants

IN a recent letter upon the experience of the city of Washington in the matter of collection and disposal of garbage, J. W. Paxton, Superintendent of Street Cleaning of that city, said: "Our garbage is collected and disposed of under contract, but we are seriously considering the advisability of a municipally owned and operated disposal plant. It costs several hundred thousand dollars to construct a reduction plant for a city of this size, and in letting the contract for only five years the contractor must figure on getting this amount of money back in the five years, and in bidding on the contract for the next five years he then has a considerable advantage over other bidders, the benefit of which goes to him instead of to the city.

"I believe that with a municipally owned garbage plant the profits from the reduction will very nearly pay for the collection."

If this is true concerning five-year contracts, it is certainly much more true concerning those for one year only, which contract period was more or less common in refuse

disposal work a few years ago, and is still the practise in Philadelphia.

Where the plant to be used by a contractor for a given kind of municipal work is portable and such as can be used for similar work elsewhere, there is no reason why he should not be required to supply it as a part of his contract. Where the required plant is semi-portable, such as an asphalt repair plant, there may be a question whether or not it would be cheapest and best for the municipality to own it and lease it to the party who contracts for the asphalt repairing for the year. But where the plant is expensive and cannot be removed for service elsewhere at the end of the contract, the only economical and sensible plan would seem to be either to let a contract for a term of years approximately equal to the effective life of the plant which is required, or for the city to own the plant which the contractor is to use. As it might well be too risky to bind the city to one contractor for so long a time, or undesirable to bind future administrations, the latter plan would, it seems to us, be preferable ordinarily.

Novelties in Water and Sewerage Treatment

A NUMBER of methods of sterilizing water which have apparently been successful in laboratory experiments are from time to time advocated for use in treating municipal supplies, although there are at present practical reasons—either difficulty of application on a large scale or excessive cost—why most of them should not be considered by water works officials until they have been developed to a more practicable stage. But such officials should keep informed as to the progress of such developments; and for this reason we present information about them occasionally, an instance being the use of ultra-violet rays described on another page of this issue. The same may be said of methods of sewage treatment, such as the electrolytic. The ozone process for water treatment is still another illustration. If a new method shows any possibility of success, we wish to have municipal officials know of it; but we desire it to be understood that a description is not to be considered as indorsement by us. As a consulting engineer once said to a client city: "I hope very much that this will be tried on some city, but I don't advise you to be the dog."

A Tin Can Contest

IN Columbia, S. C., a "Boys' City Beautiful Club" has been organized by T. Keith Legare, assistant city engineer, who serves as director of the club, and their energies have been put to practical use in a number of ways looking to a general betterment of the appearance and condition of the city. During May the members engaged in a tin can contest, three prizes having been offered to the boys who collected the greatest number of tin cans from the lots, streets and other places which had been rendered unsightly by them. During this time the boys gathered 21,576 cans, which were deposited by them in piles at specified points, from which they were hauled away by the Health Department and buried where flies and mosquitoes cannot find them. The prizes awarded were \$25, \$10 and two prize of \$5 each; the first prize being won by the collector of 6,467 cans and the fourth prize for 4,082 cans.

The total cost of cleaning the city of these unsightly objects probably did not much exceed \$75, and we doubt whether a similar amount has ever been spent by the city to greater advantage. In addition to this it is to be presumed that the boys have become thoroughly imbued with an appreciation of the undesirability of the unsightliness occasioned by discarded tin cans and similar rubbish.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Roane County Working on Its Part of Highway

Kingston, Tenn.—Rapid progress is being made by Roane County in completing its part of the Memphis to Bristol highway. Part of the route, reaching from Lawnville through Kingston to Rockwood, a distance of about seventeen miles, has been completed for years, being a part of Roane County's excellent pike system. County forces are now engaged at each end of this road, building a connection between Lawnville and the county line, where the pike runs into Loudon County. Also from Rockwood, over the mountain, towards Crossville, in Cumberland County.

Will Complete Road in August

Bristol, Va.—By August 15 Smalling & Gray expect to complete their road-constructing contract in Sullivan County, Tennessee. The grading was completed early this spring, and the firm has since been placing the stone macadam. This contract will exhaust the original bond issue of \$300,000. The latest issue of \$200,000 is not yet available, owing to litigation.

Plan to Relieve Congested Street Traffic

Rochester, N. Y.—One of the plans for a parallel street which, among others, is under consideration, is the extension of Mortimer st. through to Franklin st. and across the river to connect with a new street cut through from State st. to Plymouth ave. north, as shown in the map prepared under the direction of City Engineer Edwin A. Fisher. This plan calls for the construction of a civic center extending from Plymouth ave. north back to Elizabeth st. to be about 600 feet wide in Plymouth ave. north and a little over 400 feet wide in Elizabeth st. The carrying out of this plan would mean that, besides acquiring property necessary for the extension of Mortimer st., the city would have to purchase land through from State to Plymouth ave. for the west side parallel. This in addition to the purchase of property for the civic center makes the plan the most expensive of any yet suggested. Mayor Edgerton, in discussing the plan, said that this was simply one of the plans which are before the city officials, and that absolutely nothing had been decided upon relative to a parallel street yet. The adoption of the plan would mean the closing of Market st., it is probable. It would also mean that Church st. would not have to be extended, as it would run into civic center. One of the advantages of the plan is that there would be nine streets running into the civic center. In the plan prepared for the Civic Improvement Committee, which provides for the construction of a city hall over Main st. west with archways beneath for traffic, there would be only four streets running into the proposed civic center extending east in Main st. west from the proposed city hall location at Elizabeth st. The plan shown in the map prepared in the City Engineer's office, calls for a street 200 feet wide.

County Claims Finest Roads in State

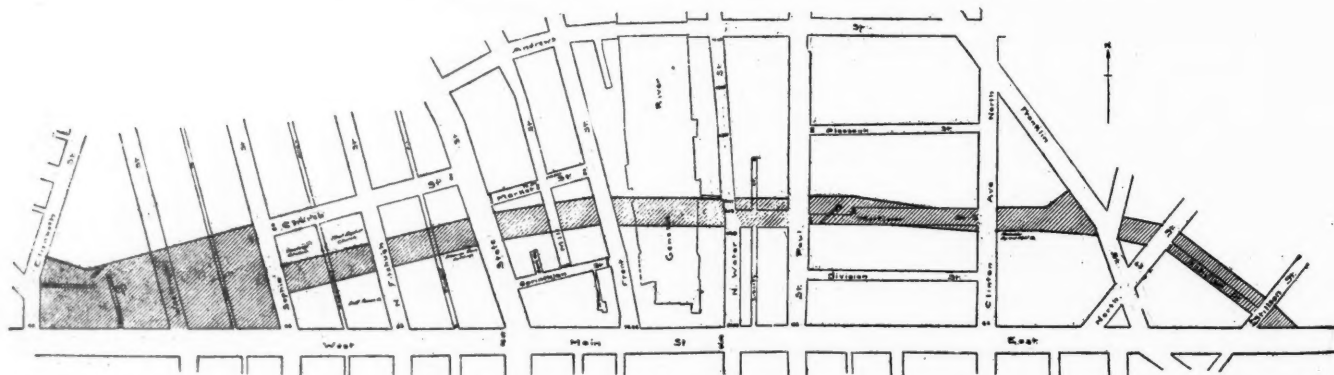
Ordway, Colo.—Crowley County will soon have a complete network of the finest roads of any county in this State. The Commissioners are planning the building of a bridge across Horse Creek in the Box Springs locality. The roads will make it possible for one to go to any desired locality in this county and also mean a saving of distance. The County Commissioners laid out and finished sixty-five miles of roads in May, and fifteen miles have been graded up to as fine a roadbed as it is possible to make by Road Overseer William Trainor and his force of men.

City Purchases Steam Roller

Jacksonville, Fla.—The new \$2,350 seven-ton steam roller recently purchased by the County Commissioners has arrived in the city and has been placed in use on road construction and road repair work by County Engineer Barnard. This new steam roller will materially assist the County Engineering Department in its work of road construction and road repair work and one of the first uses to which the new roller will be put will be that of rolling the about-to-be-laid macadam road on Twenty-first street. There is also use for the steam roller on the repair work which is to be done on the Talleyrand avenue, the Woodlawn avenue and the Main street roadways. The \$2,350 steam roller was bought from the Buffalo-Pitts Machine Company and an old roller was given in exchange, making the actual cash expenditure less than \$2,350 purchase price.

Duluth to Standardize City Paving

Duluth, Minn.—Standard grades of paving for certain classes of thoroughfares may receive serious consideration in Duluth as a result of data now being gathered and which will be put in the hands of the Board of Public Works. The Woman's Council of this city is now investigating the scheme and will make recommendations to the city with reference to it within a short time. A committee headed by Mrs. Oscar L. Mather is now at work gathering information. The council committee on streets, alleys and sidewalks has long held that Duluth at least recognize certain materials as acceptable for certain kinds of thoroughfares and insist upon adherence to them. The plan of having a dozen or more various kinds of pavement in use in one city is considered poor policy. In working out this plan, the city will solve the problem which will arise in the determining upon the grade first by considering the amount of traffic on the street; second, the class of traffic; third, grade, and fourth, weather conditions the year around. The ordinance which authorizes the city to pay for the cost of paving street intersections makes the city the largest single contributor to any street improvement of this nature, and consequently the city has a right to exercise its voice in the matter of selection of materials. The data, which the committee of the Woman's Council is collecting will be put in the hands of the Board of Public Works.



Courtesy Rochester Times.

PROPOSED PLANS FOR WIDE TRAFFIC ARTERY.

Will Spend Nearly \$500,000 on Improvements

Elizabeth, N. J.—More street improvements are going on at the present time than at any other period in the history of the city. Work of street paving and repaving, grading and curbing which is now under way will amount to more than \$130,000 and operations will soon be started on other improvements which will cost in the neighborhood of \$41,000. Bids are being advertised for on paving jobs alone which will aggregate \$30,000. Before the end of the year, according to City Surveyor William H. Luster, Jr., at least \$500,000 will be expended for street improvements, including sewers, sidewalks, pavements and repairs to streets and sewers. The impetus which has been given to the work is due largely to the efforts of the street committee of City Council, the members of which have been kept busy planning operations since their appointment the first of the year.

Building Oil and Cinder Road

Lawrence, Mass.—A new form of street construction, consisting of crushed and rolled cinders covered with oil is being introduced by Alderman Hannagan. The director of engineering has made arrangements with Pacific mills to obtain all the cinders he wants, without cost, if he carts the material from the mill. He believes that a street as durable and as satisfactory as one built of macadam, can be constructed with cinders, well rolled, tamped and sprinkled with No. 4 asphalt oil. If stone were used instead of cinders the city would have to pay about \$10 a load, he said.

Employees of the Street Department have begun to build a solid cinder road on Hillside avenue. Alderman Hannagan will fix up Dartmouth and other Tower hill streets next. He intends to repair all of the streets in the outlying districts of the city, leading to the approaches, in this manner, and is confident of putting the thoroughfares in first class condition. The Pacific mill auto trucks have been hired to haul the cinders on Hillside avenue at 75 cents a load. Alderman Hannagan plans to haul the cinders with the city teams just as soon as the repairs on Andover street near Beacon street and on East Haverhill street are completed. He is positive that the asphalt oil will absolutely prevent any dust arising from the cinders.

New Link for Boulevard

Mays Landing, N. J.—Ground has been broken for the new county boulevard from Mays Landing to Tuckahoe, for which a contract recently was awarded by the Freeholders after two years' litigation over the right of way across the dam at the Estelville Pond, owned by Anderson Bourgeois, a member of the board. This road will be an important link in the State boulevard system, connecting the counties of Atlantic and Cape May and giving a short route to extreme South Jersey.

Paving Company Pays Back Money to City

Philadelphia, Pa.—City Solicitor Ryan has received \$66,826.44 from the Filbert Paving & Construction Company in settlement of a suit in equity, instituted by the taxpayers' committee on municipal finance in the fall of 1910. It was the city's first experience in restitution of funds illegally drawn from its treasury. It is believed that before the present administration ends much larger sums will be recovered. The money was recovered on a contract which the courts declared had been entered into by the Filbert company, former Mayor Reyburn and other city officials in fraud and collusion. The exposure of the fraud was made by The North American, and the representative who laid the facts before Reyburn was excluded from the office for the rest of his term. Reyburn awarded the contract to the Filbert company in the spring of 1910. It was for resurfacing asphalt streets occupied by trolley tracks. The character of the bids indicated fraud. The company proposed to resurface quantities in excess of 500 square yards in a single block for 20 cents a square yard, and for quantities less than 500 square yards the city was to pay 75 cents a square yard. It developed that the work was so ordered or arbitrarily measured that the company collected 75 cents for 95 per cent. of the work. In equity proceedings, Common Pleas Court No. 2 declared that the contract was entered into in fraud and collusion and ordered restitution. The State Supreme Court affirmed the decision on March 18, 1912, and gave the Filbert company ninety days in which to make the payment.

Paving Block Is Received

Council Bluffs, Ia.—Nineteen carloads of Purington paving blocks have arrived in the city for E. A. Wickham. They will be used in the paving of South Main street and are a portion of an order of nearly 100 cars. The laying will probably be started within a few days. The nineteen carloads will lay over one block of paving on one side of the street. The street is being paved one side at a time so that the traffic will not be stopped. An asphalt filler will be used and the pavement will be like that on Broadway.



LARIMER AVENUE BRIDGE, PITTSBURGH, PA.—SECOND LARGEST CONCRETE SPAN IN THE WORLD.

New Highways Inspected by County Officials

Syracuse, N. Y.—The Highway Committee of the Board of Supervisors lately made an inspection of nearly all the roads that are being built under county contracts and several of those under State contracts. The trip was made to Mandana, Elbridge, Amboy, Baldwinsville, Cicero and Clay. In the party were Supervisors Richard B. Smith, David M. Dixon and P. J. Kelly, County Superintendent of Highways F. E. Bogardus and Highway Engineer Snyder. After they returned Mr. Smith said that good progress is being made on the county roads southwest of Mandana, the Cicero-Clay, Cicero-Bridgeport, Cedarvale and the Split Rock contracts. Good results, he said, are also shown on the Amboy-Warner road, which is being built by convict labor. Superintendent Bogardus has approved the plans for five new State highways for this county, prepared by Division Engineer Frederick S. Strong, of the State Highway Department. The plans have been sent to the State Highway Commission at Albany, and it is expected that they will be approved and the money appropriated in time for contracts to be awarded this year.

Promoting Ocean to Ocean Highway

Los Angeles, Cal.—There have been made tentative efforts in the past to establish a highway from the Atlantic to the Pacific, but various obstacles or lack of enterprise has always interfered. Recently, however, an enterprising publication in Los Angeles has inaugurated what is proving to be a successful attempt to get work on the highway actually started. Instead of merely sending a pathfinding car to chart the route, they have sent out a party in a Locomobile which is stopping at all towns through which the proposed highway passes and are arranging to have these various towns or cities appropriate money. They are also stopping at the capitals of the various States through which they pass and are enlisting the aid of the Governors and members of the legislative bodies. As an instance of their success, Yuma, Ariz., the first town to be visited after the Locomobile left California, raised over \$1,000 at an open air meeting, and at the same time formed an Ocean to Ocean Highway Association, the members of which are pledged to furnish still more money. The Board of Supervisors of Yuma County, at this meeting agreed to build a 20 mile road from Yuma to Dome, which is on the path of the proposed road. Each of the cities visited is giving the proposition the most enthusiastic support and it is to be hoped that when the party gets further east, where the populations are greater, their efforts will be even better rewarded.

Detroit Uses Motor Truck in Laying Asphalt

Detroit, Mich.—The experiments are being made by the city of Detroit in the laying of asphalt, with the aid of a five-ton G-M-C truck, equipped with mechanical dumping body. During the past week work was being done three and two-tenths miles from the asphalt plant. The motor truck made each trip every fifty-five minutes, carrying five tons of asphalt which will spread over an area of seventy square yards. In all, eight trips were made each day, delivering a total of 84,000 pounds, or 42 tons. The distance covered by the truck was over fifty miles a day. In comparison with horse-drawn teams—aside from the disadvantages—each team could only make the trip three times a day, delivering a total of 9 tons of asphalt. It will be seen from this that the truck is doing the work of five teams. Each load as it leaves the asphalt plant is protected by a canvas covering, which keeps in the heat.

Niagara's New Scenic Boulevard

Niagara Falls, N. Y.—One of the most impressive driveways in the world, from the scenic standpoint, will be opened to the public next month, stretching along the Canadian bank of the Niagara river for sixteen miles from the Falls to Fort Erie, opposite the city of Buffalo. The boulevard has been laid out under the direction of the commissioners of the Queen Victoria Niagara Falls Park, a beautiful tract on the Canadian side of the cataract, which has been developed within the last year or so with a view to harmonizing the surroundings of Niagara Falls with the majesty of the spectacle itself. Beginning near the Horseshoe Falls, the boulevard skirts by the whirling rapids and eddies above the cataract until the calmer waters near Lake Erie are reached, giving a variety and beauty of landscape rivalled by no other driveway of equal length in the world.

Gives Land for County Road

Red Bank, N. J.—Lewis S. Thompson, proprietor of Brookdale Farm at Lincroft, purchased part of Theron McCampbell's farm, in Holmdel, and presented it to the Board of Freeholders for road purposes. Owners of adjacent farms have agreed to sell to the board portions of their properties to be used for the same purpose. A new county highway will be built, forming part of the county road between Red Bank and Holmdel. It will shorten the distance between these places about a half mile, and will be started this summer, surveys having already been made and stakes laid by County Engineer George D. Cooper. The present road, said to be one of the most crooked in Monmouth County, will continue to be used by farmers.

City Experiments with Oil Tar

Haverhill, Mass.—Prospect street, Bradford district, is undergoing repairs under a new process, resurfaced with a tar oil and gravel. Alderman Wood tried out the experiment when he allowed the Haverhill Gas Company to spread 400 yards of oil dressing which has been used extensively in Fall River and which the Barrett Manufacturing Company has been putting out as one of its best street dressings. If the oil should be found to be valuable for street dressing, the city could buy the company's output at the local gas plant, which would mean a big saving in freight as well as having the goods on hand all the time. The company would be saved the expense of preparing it for shipment as well as the cost of loading and shipping and the city could buy its own supply at a low figure. The experiment was started to determine the value of water gas tar when applied on the streets as a dust-layer. Joseph E. Nute, manager of the Fall River Gas Works Company, Alderman Wood, Thomas Nickerson, manager, and Horace H. Field, superintendent of the Haverhill Gas Light Company, spent some time experimenting with the tar on Prospect street. The road was first carefully swept clean of dust and one of the city's watering carts filled with water gas tar was driven over the street, the tar being allowed to spread evenly over the surface. The tar was then brushed into the gravel road by men with brooms, so that it had a chance to soak into the surface of the road. The street was then roped off and remained so for a day. Mr. Nute, of Fall River, has used this tar on the streets of Fall River very successfully for the last two years, and it is found that two applications will keep the street surface free from dust and hold the gravel together for a year; the second year only one application is necessary.

Will Bring Slag Block From England

Washington, D. C.—The steamship Andyk of the Holland-American line has been chartered to bring a cargo of about 4,000 tons of slag paving block from Middlesboro, England, to Washington, and it is stated that the vessel is now at the British port loading and should arrive in about a month or six weeks. Arrangements for chartering the steamer followed a visit of E. D. J. Luning, agent of the Holland-American line, at Newport News, to Washington about three weeks ago. The cargo the vessel will bring, like previous cargoes of the same material, will be used in the paving of street railway tracks in various parts of the city. The vessel will berth at the Ninth street wharf of the American Ice Company to discharge. While the Andyk will bring the largest cargo of the bricks ever unloaded here, the vessel, it is stated, is not as large as the British steamer Paul Paix, which unloaded the block at this city in 1910. She discharged 3,500 tons of the material, but came here only half loaded. Last spring the German steamer Haake discharged about 3,500 tons of the brick at the Ninth street wharf.

SEWERAGE AND SANITATION

Authority of Sewerage Commissioners Defined

Albany, N. Y.—The Bronx Valley Sewer Commission, without the approval of the State Department of Health, has the power to alter the original plans providing for the construction of a sanitary trunk sewer, an outlet and sewage disposal plant in Westchester County, according to an opinion rendered by Attorney General Carmody. The opinion holds that while the act providing for the construction of the sewer required the approval of the State Commissioner of Health and the State Engineer to the proposed plans, that law has been since amended so that this requirement is no longer necessary.

Sewer and Water Systems Completed

Las Cruces, N. M.—The contractors who had the contract for putting in the municipal water systems have completed their work and the two systems are ready to be turned over to the trustees, according to the terms of the contract. The original bid for the completed systems amounted to \$55,000 in round numbers. The board in charge of the work for the town had the right, according to the specifications, to add to any line, or to increase the size of any line by increasing the contract price in proportion to the added equipment. As the water system stands to-day there is a little over eight miles of pipe which ranges from two inches to twelve inches and affords a complete system of water protection in case of fire as well as a pure supply for domestic and other purposes. Over nine miles of sewer pipe have been laid in the completing of this contract, and as a result the total cost of the completed systems will run close to \$75,000 on account of this added mileage of pipes. The above sum was realized from the sale of sewer and water works bonds and the provisions of the bond issue made it necessary to use all this fund for construction purposes only. One of the great and lasting benefits of the pumping system installed on the mesa where the city wells are located is the proving of the statement made by geologists and others that the Mesilla Valley had an underflow of pure water that was second to none in the State, and the wells of the water works, drilled to a depth of 128 feet with water standing to within 60 feet of the top, shows that the underflow has the pressure to force the water upward in the well and to maintain this level even with the pumps throwing over 24,000 gallons per hour, equal to 400 gallons per minute. The pumping equipment consists of a double action cylinder pump driven by a 25-horsepower oil engine. This engine handles the pump with perfect regularity and by speeding down to 28 strokes per minute the water level in the well is not lowered to any appreciable extent while the well produces 400 gallons per minute, this water being in turn forced to the top of a water tower 60 feet in height and thence into a tank. Las Cruces can now boast the most modern utilities for the comfort and safety of the populace, for with an efficient electric light plant, modern ice factory, complete water system, sewer system and several miles of paved streets as well as graniteoid walks on all the business streets and most of the residence streets, this town stands at the head of any town of double its size in the State.

Stopped Sewer Pipes

Trenton, N. J.—Charging that the Ocean Grove Camp-Meeting Association deliberately closed the pipes of the sewer system of Neptune township, Monmouth County, with bags of cement, the Sewerage Commissioners of the township have filed a bill in the Court of Chancery to restrain the association from repeating the act. The commissioners claim that they have a contract with the association to use part of its system to carry the sewage to the sea, but that without reason officers notified the commissioners that the contract would not be continued. The stopping of the pipes followed and will cause the pollution of Wesley Lake until the township can provide an independent system.

Public Drinking Cups

Louisville, Ky.—Dr. J. N. McCormack, of Bowling Green, Ky., secretary of the State Board of Health, proposes to see that the new law abolishing the public drinking cup in Kentucky is observed and he will ask that the health boards in the larger cities of the State co-operate with him in the enforcement of the statute adopted by the last General Assembly. The law becomes effective June 12. The law forbids the placing of, or keeping of, public drinking cups in any public building, including railway stations and halls. Cups and dippers will be removed from public wells.

Engineer Reports on Sewerage Plans

Cumberland Mills, R. I.—The report of committee appointed one year ago to investigate the matter of the installation of a system of sewerage and disposal of sewage for the Valley Falls and Lonsdale districts, was given at the financial town meeting last week and was accepted as a report of progress. The committee presented the report submitted by Samuel M. Gray, of Providence, an expert engineer, who had been engaged by the committee and had made an extended examination and study of the situation. In regard to the disposition of the sewage, Mr. Gray had the following to say: "An inspection of the territory included in the sewer district shows that two or three locations, situated along the Blackstone river, may be found for sewage disposal works. It is not advisable under the circumstances to discuss at the present time the relative merits of the different locations, inasmuch as the data at hand are entirely inadequate for that purpose. Naturally the most convenient place for treatment of the sewage would be at or near the junction of the Abbott Run stream and the Blackstone river. But, inasmuch as the boundary line between the town of Cumberland and the city of Central Falls is but a few hundred feet below this point, objections would immediately be raised by the latter city, even if the necessary area upon which to locate disposal works were available.

"In my opinion it is not wise to turn crude sewage into the Blackstone river, as the general tendency at the present time is to prohibit the pollution of streams, and, moreover, the time is coming when it will be found necessary to remove such sources of pollution; therefore, it seems advisable that provision should be made for some form of sewage treatment, whereby an effluent may be obtained, which, upon discharge into the Blackstone river, will not become a nuisance. Obviously, it is better to provide for a system of sewage disposal now than to find it necessary to do so later on, and at an additional cost. At some future time, perhaps, the needs of a metropolitan system of sewerage, starting possibly at Woonsocket, embracing the Blackstone Valley drainage area, and having a suitable tide-water-discharge will be manifest. Therefore, owing to what we might term the temporary aspect of the situation as regards the treatment of the sewage, it would not seem advisable, at least, to adopt a means of disposal whereby provision is assured too far into the future, or whereby a large amount of expenditure is needlessly incurred.

"The conditions met with as shown by a study of the different phases of the situation are most unusual. Sewage cannot be discharged into Abbott Run stream, as this is a source of water supply for the city of Pawtucket, and therefore all drainage naturally going to this stream must be intercepted and diverted elsewhere. Land suitable for purposes of disposal having either a sufficient area or desirability of location is difficult to find. The intersection of the district in general by two divisions of the New York, New Haven and Hartford Railroad, namely, the Franklin and the Worcester divisions, serves only to render an already difficult situation even more difficult.

WATER SUPPLY**Reservoir Wanted for a Playground**

Cohoes, N. Y.—At a recent meeting of the Water Board, David Ashworth, representing a number of property owners of the First Ward, appeared and asked that the old city reservoir, No. 1, be turned into a playground for the children of the city. The reservoir has not been used since the filtration plant has been in operation. The matter was referred to a committee of the board.

Ample Water Supply for City

Whitesburg, Ky.—A large concrete dam is being completed across Elkhorn Creek in the city of Jenkins, from which the city will receive its water supply. The dam will contain some several hundred million gallons of water, and it is said will furnish ample water for the city's needs during a drought of six months. Along the shores of the lake the Consolidation Coal Company's officials' homes are being completed, while immediately above Camp Crawford and on the waters of the lake is an ideal park with pretty driveways which will entirely encircle the lake. Millions of dollars are being expended in building operations and the improvements upon the city, soon to be the metropolis of all eastern Kentucky.

Favor Town Water Plant

Millville, N. J.—In a referendum vote at a special election held in Millville last week it was decided by a majority of 186 to give the City Council of Millville the authority to acquire control of the water supply. The vote was light. The election was held as a preliminary step to the proposed purchase of the two warring companies, the Millville Water Company and the People's Water Company.

Work Started on \$145,000 Water Plant

Manhasset, L. I.—Work has been started on the Manhasset-Lakeville water plant, which when completed will cost in the neighborhood of \$145,000. For the past three years the residents of these sections have been advocating the establishing of a water plant, but it was not until after several big fires occurred in Manhasset that a definite stand was taken. The district was formed in May, 1911, and the following commissioners were appointed: D. S. Wooley, Owen P. Kennedy and J. M. Belknap. Work has been started laying the water mains and ground has been broken for the erection of the standpipe and pumping station. The former will be erected on Prospect avenue, in the Great Neck Hills section, while the pumping station will be built on the flats near the "big bridge." The contract, which has been awarded to W. G. Fritz, of Dover, N. J., calls for the laying of 22½ miles of pipe throughout the entire Manhasset and Lakeville School District. Oil will be used for fuel in the pumping station, as it is believed it will be much cheaper than coal or gas.

To Pay Dover \$13,011 for Abstracting Water

Trenton, N. J.—The Supreme Court has affirmed a judgment for \$13,011.07, obtained by the town of Dover against the Richardson & Boynton Company, which was sued for abstracting water surreptitiously from the mains of the municipality. A previous verdict for \$15,881.20 had been set aside by the court on the ground that the amount was not justified by the evidence. Involved in the suit was an alleged breach of confidence on the part of the company in trying to steal a part of its water supply. In order to afford adequate protection in case of fire, the municipality agreed to leave available a large main, the valves of which it was agreed should not be turned on, except in case of emergency, in which event the company was to pay for such water as might be taken. Notwithstanding this agreement it was shown that under the direction of certain of their superiors, employees of the company made a practise of turning on these valves, thus obtaining a large part of the company's water supply without the knowledge of the municipal authorities. The court held that the jury was justified in concluding that the town had lost enormous amounts of water by these abstractions. It was also pointed out by the court that in an action in tort, such as that brought by the town, the evidence does not need to be so convincing as in a similar case on contract.

New Water Pipe Line Benefits City System

Fort Worth, Tex.—The city's water supply for the summer will be materially benefited in the substitution of the iron pipe line for the old wooden pipe line on the South Side and new pumping facilities on the North Side. The officials state that the water system from both supply and pressure standpoints is in better condition now than at any time before. The new iron pipe line, which displaced the old South Side wooden line, has been put in operation, and all sections on the far south part of the city will receive a much higher pressure of water. The North Side supply will not lack in any particular, according to investigations made at the invitation of Commissioner Grant. It is also estimated that the new equipment gives ample supply to care for the Sam Rosen system, in case the offer of its sale is taken up by the city.

STREET LIGHTING AND POWER

Opposed to Town Lighting Plant

Winthrop, Mass.—The committee appointed at the Winthrop March town meeting to investigate the advisability of municipal ownership of a gas and electric plant, also gas and electric contracts as affecting municipal lighting and private consumers, has recommended that the town should not acquire a plant at the present time. The committee is composed of Charles E. Cowan (chairman), William McKie, George H. Gibby (secretary), Charles P. Pike and Edgar H. Whitney. It recommends that the town make a new contract with the Suburban Gas & Electric Company upon terms described in the report. No opinion is expressed as to whether the town should contract for all-night street lighting. Figures are submitted in an effort to show a loss of \$28,000 a year to the town under municipal ownership. The committee believes this increase would be a special injustice to about 25 per cent. of the householders, who use neither gas nor electricity, and it is thought it would be necessary to increase prices to \$1.30 per thousand cubic feet for gas and 14 cents per kilowatt hour for electricity. The present rates are 90 cents for gas and 12 cents for electricity. The rate for electricity is to be reduced to 11 cents beginning July 1.

Replies to Criticisms of Electrolysis Work

Chicago, Ill.—City Engineer Ray Palmer, addressing the members of the City Club, replied to the objections and criticisms the street car companies have directed at his proposed electrolysis cures. In round figures, he said, the city and the public utility companies whose property was being disintegrated by the stray electric currents underground are spending in repair work sums which, if considered as 5 per cent. interest, would equal an investment of \$12,110,000. "Chicago is entitled to the best street railway system in the world," he said. "I believe that a great mistake was made when it was decided to install the present overhead trolley system during the rehabilitation period, instead of the slot conduit system. Especially is this the case within the downtown or central district, where the structural steel buildings are so numerous and the trolley pole space is so much needed." In conclusion the city electrician declared the cost of the ordinance requirement to stop damages caused by electrolysis is not prohibitive, as the companies claim. He said the cost would be less than \$5,000,000, which, he asserted, was 2.3 per cent. of their total valuation of \$220,779,000.

Bell Company to Pay City \$82.50

Altoona, Pa.—Under the provisions of the ordinance imposing a tax on the mains of gas and water companies and the conduits of electric light, telephone and telegraph companies, these companies are required to make a return of the number of miles of such mains or conduits to the city controller and to file a map showing the size, depth and location of them with the city engineer. The Bell Telephone Company recently complied with the provisions of the ordinance. The plans show a total of three and three-fourth miles of conduits maintained by the Bell company in the city. The other companies have been notified and it is expected that they will make their returns shortly. The tax is \$30 per mile, and under its provisions the Bell company will pay the city \$82.50. The revenue derived from this tax will probably amount to about \$500 per year.

FIRE AND POLICE

Kanawha Engine Beats City Apparatus

Philadelphia, Pa.—George D. Porter, Director of Public Safety; Chief Waters, of the Fire Department, and a number of city officials witnessed the demonstration recently of a new chemical fire-fighting apparatus, the product of James Boyd & Bro., manufacturers. Two miniature houses were erected on a vacant lot at Twenty-sixth and Wharton streets, and at a signal given by Director Porter both were set on fire. Two chemical engines, one owned by the city and stationed at Twentieth and Federal streets, and the other, known as the Kanawha chemical fire apparatus, fought the blazes to determine which could extinguish the fire in the shortest time. Less than two minutes after the signal had been given both hoses were being played on the inside of the structures and after the lapse of eight minutes the fire in the building upon which the Kanawha engine was working was pronounced extinguished. The city's men did not completely quench the flames in their building. After the chief test was over the men using the new solution took a quantity of excelsior, saturated it with gasoline, then with their chemical, and threw it into a blaze. The material failed to catch fire. It is the contention of the Boyd concern, which controls the sale of the Kanawha engine, that the latter is far superior to other chemical engines. The chemical engines owned by the city are of the "soda and acid" type, while the one demonstrated is called an "air pressure" chemical engine. Following the demonstration Director Porter declared he was greatly pleased with the work accomplished by the new engine and that if subsequent demonstrations prove it superior to the engine now used by the city, it will be adopted as a standard. More than 3,000 persons witnessed the exhibition.

Policemen to Fight Flies

New York, N. Y.—A squad of Commissioner Waldo's best policemen will hereafter be assigned to the city's Health Department to make war on the fly. Those are Mayor Gaynor's orders, and they will be carried out. The "fly squad" will not be permitted to kill flies. That is not the object at all. They will simply have to see that no fly or no more flies than are just necessary will make their home in the city. Their principal duty will consist in clapping the lids down tight on all garbage cans in the city. It is a violation of section 108 of the Sanitary Code to leave a garbage can open. This section is disobeyed in every quarter, and the "fly cops," therefore, if they are disobeyed too much, can make arrests.

Solve Problem of Increasing Water Pressure

Tulare, Cal.—In order to conserve water when fire comes and to give better pressure, the water company has connected a large steam whistle with the fire alarm system. One long blast when an alarm is sounded is notice to the people to cut off their water and close their hydrant. When the fire is out, two long blasts are the signal to turn on the water. The low pressure during fires has been the subject of much criticism at Tulare.

New Police System Is in Use

Fort Worth, Tex.—The Gamewell police and alarm system has been put into effect and now the reports and calls made by the police are over the Gamewell wires. Starting with beat No. 1 at Main and Weatherford streets, the call is made at two minutes after the hour, hourly calls being made. There are several boxes on each beat and an officer can call from any one of the number that suits his convenience best. The officers on the other beats have their calls timed each two minutes later all down the street as far as the system extends. As each call comes into the office it is registered on a big sheet. Thus every day the chief has submitted to him a complete record of the work done by each officer, number of arrests, if the calls or reports were made on time, time on duty and time off duty, etc. There are thirty-five call boxes or stations now in use. The system has six circuits, with a possibility of twenty-five boxes for each circuit, so there could be 150 boxes on the circuits of the system.

AUTO APPARATUS NOTES

Newport News Councilman Reports Favorably on Richmond's Gasoline Engines—Saving in Cost of Fuel at Fires is Important Item—Syracuse Receives Its First Machine

Newport News, Va.—Walter B. Livezey, member of the special committee of the City Council which is investigating the advisability of installing motor-driven fire apparatus in this city, lately attended a demonstration of such apparatus in Richmond. Mr. Livezey was deeply impressed with the showing made by the engines. Upon his return he made the following statement regarding the apparatus: "As a member of the special committee from the finance committee of the City Council, appointed to investigate and look into the feasibility of motorizing, in whole or in part, the Fire Department equipment of this city, I visited Richmond to be present at a test of this sort of equipment. The engine tested was a 'Knox Automobile Triple Combination Fire Engine.' This engine, with the greatest ease, went down the steep grade of Board street from Governor street and up the steep grade on to Church Hill at a swift automobile speed without any apparent exertion, or without lessening speed. Such an engine, I am informed, weighed some 14,000 pounds and cost \$9,000. An engine of this type, would, with the greatest ease, cross any bridge in this city. There are other engines of different makes than the 'Knox,' which is made in Springfield, Mass., but an engine of this type and size has been in use in Richmond at its Third street station, between Board and Franklin streets, for some eight months. The chief of the Fire Department and the Fire Commissioners are all high in their praise of its satisfactory and efficient service, and especially for economy. I was told by the chief of the Fire Department that the cost of maintaining this engine, including gasoline, had been less for the eight months than the cost of maintaining the other steamers drawn by horses, during one month. The cost of maintaining this engine, including gasoline, during the period of eight months, I was informed, was \$30.60, which included service for about fifteen hours at the Binswanger fire. I was told by the chief of the Fire Department that the coal alone, exclusive of lubrication, used by each of the steamers at the Binswanger fire was about \$20.00. This shows the economic service given by the motor-propelled and motor-operated fire engine for municipal use. I believe the city of Newport News could well consider, from the economic standpoint, the motorizing of a part at least of its fire apparatus, provided, of course, the question of politics in the operation of this sort of equipment can be eliminated from the Fire Department. Under a proper business management, I am inclined to believe motor equipment is desirable and wise, but men of skill and judgment must be had to properly care for and operate the apparatus. I believe the Fire Department of this city contains a number of that class of men and, personally, I hope other members of the committee will avail themselves of every opportunity to study this question. I am ready to join with them in further study, as I am interested in the subject."

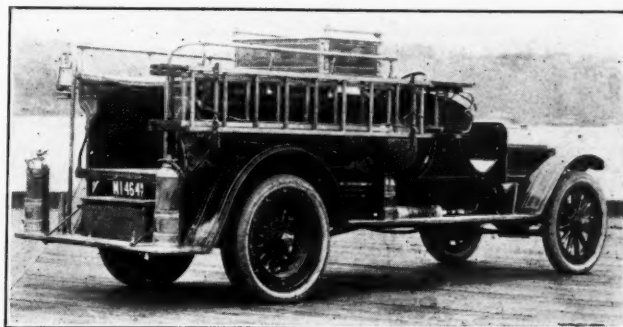
Syracuse, N. Y.—First Assistant Chief Thomas F. Ryan's Reo runabout, recently put into commission, is the first automobile ever purchased by the city for use in the Fire Department. Chief John P. Quigley has used his own automobile for some time. The efficiency and economy of the automobile in fire service is being gradually recognized by the city officials, who have paid considerable attention to the excellent work done by Chief Quigley's car in winter as well as in summer. His duties, aside from going to fires, requires Chief Ryan to travel on an average of thirty-five miles a day. Heretofore it has taken about three hours to make the rounds, but it has already been demonstrated that with the automobile he can cover the same territory in about an hour. There have been times when double duty or frequency of fire alarms has forced Chief Ryan to use more than one horse, and the work in winter has been exceedingly severe on the horse at times. Besides being much faster, the automobile has proved to be easier to handle. The cost of maintaining the horse used by Chief Ryan has been placed at \$350 a year, but it is believed that the maintenance of the automobile will not be near this figure.

New York, N. Y.—The first automobile hook and ladder truck has been installed in the quarters of Truck 16 in East Sixty-seventh street. In the old style the aerial ladders are raised by cranks operated by the crew. The new auto ladder is raised by electric power put in motion by pressing a button. Old Truck 16 was pulled to the repair shops by Pride, Prince and Dundee and will be held there as a substitute piece of apparatus. The horses were taken to the training stables and will be sent to companies needing them.

Chester, Pa.—A satisfactory test of the apparatus of the various fire companies of this city was made at Edgmont avenue wharf in the presence of the members of the fire committee of the City Council—John K. Hagerty, chairman; J. H. Morrow, William Powel, David Lamont, Daniel H. Griffith, Harvey F. Lamb, William Provost, Jr., John Luttrell and H. Louis Morris. To avoid confusion in case of an alarm, the apparatus of one company was tested at a time. All the steamers appeared to be in excellent condition and fine working order. The Franklin's steamer, according to Councilman Hagerty, chairman of the committee, was in as good condition as when it left the factory. Chief Lincoln E. Slater, of the department, was well pleased with the showing made by each company. The Franklin Company, with its steamer and combination wagon was the first to report at the wharf. The Felton Company, with the aerial truck, steamer, combination wagon and auxiliary steamer, left the headquarters, Third and Morton streets, at 1:30 o'clock. The Moyamensing Company, with its truck, left the house at Broad and Upland streets at 1:45 o'clock, and the Hanley Company, with steamer and combination wagon, and the Good Will, with a combination wagon, left their respective house at 2:15 o'clock. The Franklin steamer was the first tested. With a steam pressure of 115 pounds, the apparatus had a water pressure of 245 pounds on a single lead of hose; with the same amount of steam pressure, the steamer registered 170 pounds water pressure on a double lead. The hose was found in good condition. The next apparatus inspected and tested was the Felton steamer, which with 110 pounds of steam pressure, registered 240 pounds of water pressure, on a single lead; and with a double lead and 105 pounds steam pressure, the steamer showed 180 pounds water pressure. The Hanley Hose Company's steamer, with 115 pounds steam pressure on a single lead showed 250 pounds water pressure and with two leads and 110 pounds steam pressure, it registered 190 pounds water pressure. The auxiliary engine of the Felton Company, with 78 pounds of steam pressure, showed 180 pounds of water pressure on a single lead, and with a double lead and 75 pounds of steam it registered 135 pounds water pressure.

The hose of the Good Will Company was attached to the Hanley's steamer and was tested with 230 pounds and 195 pounds water pressure. Then the hose of the Good Will Company and the Hanley was divided into four leads and the steamer with 130 pounds of steam pressure registered 120 pounds water pressure. During the test six sections of the Hanley Company's hose burst. Aside from this, all of the hose was found in first class condition. The trucks of the Moyamensing and Felton Companies were tested by the raising of the extension ladders.

City Clerk Charles B. Mould acted as clerk of the fire committee and made complete records of the test.



TYPE OF AUTO COMBINATION CHEMICAL RECENTLY ORDERED FROM INTERNATIONAL MOTOR COMPANY BY NEW YORK CITY.
MACK CHASSIS.

GOVERNMENT AND FINANCE

Double Tax Collection by Commission Rule

Trenton, N. J.—Taxes collected by the city since January 1, 1912, amounted to \$268,003.60, as against \$133,656.46 for a corresponding period of last year. A large portion of this increase is due to the fact that this year there is to be a sale of properties upon which the taxes have not been paid. The collection of personal and poll taxes this year also helped to increase the grand total. Under the old form of government the latter taxes were not very industriously gathered.

Wilmington Pleased with Commission Government

Wilmington, N. C.—Wilmington has finished one year under the commission form of government and the yearly statement has been compiled. The statement shows a remarkable change in the trend of the affairs of the city, and is proof positive that the present form excels by far the old and complicated system of government of former days. The total expended during the year for current expenses, street improvements, etc., amounted to over \$580,000. The fine results of this are apparent on every side. In the present manner of government the executive work rests with five men, with each man's work designated, and clearly defined. The people know who to look to and get what they want without yards of red tape. Under the old form the city government was unweildly. There were about 40 men upon whom the responsibility rested. The result was a conglomerate mass of misunderstanding and mismanagement. Everybody is pleased with the commission form and with the present commissioners.

New Mayor of Klamath at Work

Klamath Falls, Ore.—Mayor T. F. Nicholas is doing everything to get the city out of the charter tangle resulting from the adoption of two charters. The council passed a motion to proceed under the commonly-called Sanderson-Manning charter. This ignores the commission amendment which carried at a subsequent election, and was proposed ahead of the Sanderson-Manning instrument, but was put aside to vote on the other. It was not submitted to a vote until after the other charter had been adopted and the regular city election was called. At the election Nicholas defeated Sanderson for Mayor and the commission amendment carried by a small vote. The action taken by the council in deciding to act on the Sanderson-Manning charter meets with general approval. Whether it is a legal charter will have to be decided by the courts, or it may be left to the decision of the bonding companies. If the bond buyers refuse to accept improvement bonds issued under the charter then it will be up to the city to either amend the charter to make it legal or else to adopt a new one.

Town Finds It Has Big Deficit

West Orange, N. J.—Expert scrutiny of West Orange's books reveals that the Council, for three years past, has raised by tax levy about \$20,000 less than required to meet the year's expenses. Each year short term notes were discounted "to provide funds in anticipation of taxes." Each year "uncollected taxes, etc.," have been carried as an asset and applied to a reduction of the tax levy. No account apparently was taken of the notes that had been issued in anticipation of taxes and which constituted a lien against the uncollected taxes. Consequently the deficit increased each year until now it is about \$55,000. Council was about to make the same error this year, but on advice of the expert accountant the tax levy for the coming year was recently increased \$20,000. In a previous consideration of the present year's tax ordinance, the usual deduction of \$20,000 for "uncollected taxes, etc.," had been made. The amended ordinance eliminates this deduction. Besides increasing the budget for this year by \$20,000, the Council has taken preliminary steps to issue bonds in the sum of \$55,000 to take care of the deficit incurred by the insufficient levies of 1909, 1910 and 1911. In attempting later to explain the situation, James T. B. Lohman, chairman of the finance committee, said an error was in failing to make provision for current charges under the delusion that there was unappropriated money and uncollected taxes, but, as set forth in the expert's statement, these taxes were needed to liquidate the debt incurred in anticipation of their collection and there were no unappropriated funds to draw from, with the result that the town is still borrowing.

Want Commission Government

Wildwood, N. J.—Steps are being taken to get the city of Wildwood into shape for a vote on commission form of government. When the boroughs of Wildwood and Holly Beach consolidated last fall, it was the understanding of the voters that government by commission would be inaugurated at the earliest possible moment.

Rejects Commission Government

Ventnor City, N. J.—Commission government was decisively defeated by the voters of Ventnor at Ventnor City's recent election, the "Fors" not only being beaten by a majority of three, but also failing to register the requisite 30 per centum vote had they obtained a majority. The final count was 51 against and 48 for. Three years must elapse before Ventnor City can take any other action, if the citizens here desire to do so, upon the commission form adoption, and the city will be the only municipality under the older form on the Island.

STREET CLEANING AND REFUSE DISPOSAL

Pleased with New Flushing Machine

Billings, Mont.—There will be no great difficulty in keeping the paved portions of Billings thoroughfares in a "spick and span" condition during a great part of the year, is the opinion of those who witnessed the tryout recently of the new flusher, which was lately purchased by the City Council. The machine was tested on the principal streets and performed its work to the satisfaction of the aldermen and citizens who witnessed it. It is understood that the entire paved portion of the streets can be cleaned once every 24 hours and its use will make sprinkling unnecessary in the business district, except possibly in the afternoons of extremely warm days.

New Street Apparatus Has Arrived

Lockport, N. Y.—The new street sprinkler and automatic flusher purchased by the city recently from the Studebaker Company of South Bend, Ind., has arrived and been turned over to Street Superintendent Johnston. Both machines are of the latest make and will no doubt be a valuable addition to the equipment of the street department.

RAPID TRANSIT

Will Order 100 More Stepless Cars

Brooklyn, N. Y.—The new stepless car of the B. R. T., which has been in successful operation on the Greene and Gates avenue line for several weeks, has pleased the patrons of the line who have ridden in it. The company, it was said, has decided to place an order for 100 more of the new cars. The cars, when completed in the fall, will be divided between the Greene and Gates avenue line and the Flatbush avenue line.

City May Save \$1,000,000

Brooklyn, N. Y.—Quick action on Brooklyn transit and a saving of a million or so of dollars to the city of New York will result because of a plan being worked out in the Public Service Commission. The plan contemplates the letting of contracts on the extension of the Fourth avenue subway from Forty-third street to Eighty-sixth street, before July 20. The money will be saved because the contractors, who have all their materials and implements on the ground, will be able to bid a half a million or so lower, per contract, than they would if they had removed their implements from the Fourth avenue cut. The plan was suggested to Public Service Commissioner Williams indirectly in a talk the commissioner had with Contractor E. E. Smith, who is working on the section which ends at Forty-third street. This contractor pointed out to the commissioner that the city would save money if it advertised contracts for the Fourth avenue tube before the contracting firms now working in the cut got all of their materials and implements out. The commission got busy on this hint and has empowered the drawing of the contract forms. The engineering department of the commission has reported that the contracts will be ready by July 20. This will allow plenty of time, as the contractors will not be out of the Fourth avenue for three or four months yet.

MISCELLANEOUS

Will Provide Free Milk for Infants

Nashville, Tenn.—The city has established a city dispensary in which clean milk is supplied to infants. It is to be equipped by Mrs. Mary Herbrick, a public-spirited woman. She was induced to act after the city had failed to furnish the money. The Nashville Health Department is thoroughly in sympathy with the project. It is expected to save the lives of many children.

City Will Add Three Miles River Frontage

Philadelphia, Pa.—Plans have been completed for the greatest step ever taken in the development of Philadelphia port facilities. Arrangements have been made for the passage of an ordinance in Common Council for opening three miles of the south Delaware River front to the construction of piers, some of which may be large enough to accommodate three ocean-going vessels on each side. By the opening of this extensive territory, the city will be relieved of the incubus which has long handicapped it in its fight to attain its rightful commercial place. Heretofore the obstacle has been inability to provide pier space for new ship lines. With the opening of the additional section of the river front this bar against steamship companies will be removed. The key to this important constructive work is the extension of Delaware avenue south of Christian street. There is a bill now in councils defining the lines of that avenue. It provides that Delaware avenue shall be 150 feet wide. Beginning at a point near Queen street, the avenue will take a southwesterly direction to an intersection with Swanson. Following the line of Swanson street, which will be widened to 150 feet by taking property on the west side, Delaware avenue will continue to Morris street, where it will intersect with Commercial avenue, which will be widened to 200 feet to a point near the intersection with Porter street. At that point it will be widened to 250 feet as far as Pattison avenue. This will provide a commercial avenue by which three miles of river front, for the most part now undeveloped, may be reached. Along this avenue will run the Belt Line Railroad, giving connections with the new piers to be built. The city will at once acquire as sites for the construction of piers the foot of each street running down to the river. It may, by condemnation, take all the undeveloped bulkhead property.

Town Has First Public Playground in State

Fessenden, N. D.—Fessenden has the honor of establishing the first civic playground in the State directed by a competent overseer and supported by the townspeople. F. H. Watkins, physical director of Fargo College, will have charge of the work, which will embrace all branches of athletics, and he will have classes from the smallest children to the young men and women of the town. The playground movement in Fessenden originated with the members of the Saturday Club. Every citizen is a member of the playground organization and there are no dues required. Several adjoining lots in the center of the town were donated by the owners for the work. These were cleared, rolled, swings erected, giant stride, horizontal bars, seesaws and sand-piles were constructed about the grounds and tennis courts, basket and baseball grounds arranged for, as well as a croquet court. Thus every branch of athletics has been provided for, including swimming and all of the work has been done by the citizens of this city. Benches have been placed around the grounds for the benefit of on-lookers and spectators at the various events. Girls and boys alike play at each of the games. Perfect discipline is always maintained and any roughness of language or deed means instant suspension of privileges. A large part of the money necessary to carry on the work is raised by popular subscription. Baseball games between the town teams, field days, band concerts and picnics all help raise money for the event as well as providing social amusement for the citizens. The amount raised for expenses was \$451 and the amount expended last year was \$330, leaving a balance for next year of \$121. In connection with the playgrounds are well kept school gardens which are under the direction of Mrs. Hampton Lyness. These gardens have been freely commented upon by numerous visitors who are amazed at the artistic arrangement of the flowers and vegetables.

City's Profit from Park Sheep

Trenton, N. J.—Because a net profit has been received from the wool of the sheep at Cadwalader Park, Commissioner Burk intends to stock the park pasture with thoroughbreds next year. The wool was disposed of at a local manufacturing plant.

City Gets Deed of Playgrounds

Oneida, N. Y.—The opening of the children's public playgrounds, known as Maxwell Field, at the foot of Sand street, was marked by a parade, public exercises and the presentation of the deed by the donor of the property, John Maxwell, to Mayor Otto Pfaff as the city's representative. Riding in automobiles at the head of the procession were Mayor Pfaff, Mr. Maxwell, Rev. W. H. Yard, Prof. Skinner of Cazenovia Seminary, Prof. Findley, of the New York State School of Agriculture, and women having a part in the exercises. In all there were 1,200 school children and 850 grown persons. City Attorney Daniel C. Burke made a brief address on behalf of the Mayor in acceptance of the deed. Prof. Skinner and Prof. Findley also spoke briefly. Later the playgrounds officials propose to erect a large building on the grounds for athletic purposes and a swimming pool for public use.

Longmont Women Beautify Parks

Longmont, Colo.—The different women's clubs of the city have become interested in civic beauty and have taken it upon themselves to beautify the parks of this city. The Entre Nous Club, with Mrs. Allie Carmean as president, took the initiative in the movement, and after raising funds for the purchase of flowers and shrubbery, appointed a committee to wait upon the city council and ask for aid in preparing flower gardens in the parks and on the lawn at the city hall. The city fathers immediately complied with the request and put several men at the disposal of the women in carrying out the work. The ladies took care of the work of planting and setting out the flowers and shrubs themselves, while the city employes did the heavier work at the direction of the ladies.

Women Hold Up a Contract

Atlantic City, N. J.—Women who have cottages on Victoria Place started last week to prevent the building of a jetty ordered for the end of that street by Ventnor's City Council. They succeeded in frightening off the contractors, Holland & Donnelly, and their men, and since that time have maintained a strict blockade, which has prevented the return of the workmen. The ocean is cutting in at Victoria Place, but the women did not want their street filled up with building materials all summer. They decided to sit on the wagons. Some sat on the load of stone. "Now, go ahead and unload this stuff if you dare," they said. To unload meant to bring certain injury and perhaps death to the women. That meant big damage suits, to say the least. The drivers thought for a time and then capitulated. Mayor Bew is now trying to have the Council hold the contract back until September 1.

Claim Proposed Bridge Would Injure Harbor

Trenton, N. J.—As showing what one man can do, Mayor Donnelly sent to Congress a petition signed by more than 10,000 residents of this city in four days protesting against the new bridge the Pennsylvania Railroad wants to erect across the Delaware river. The Mayor claims that such a bridge would entirely bottle up the shipping in the harbor and make the deeper Delaware not worth while.

Perth Amboy Will Open Public Playgrounds

Perth Amboy, N. J.—Four public playgrounds, the first of their kind in the city, will be opened about the middle of next week, according to plans of Playground Supervisor Fred D. Eichbauer. He has the contractors busily engaged in making the necessary apparatus. The Public Playground Commission will choose two male directors and four female assistants to conduct the playgrounds. The playgrounds to be established about schools 1, 2 and 8 are to be equipped with apparatus as designed by Supervisor Eichbauer. The grounds about school No. 8 will be used by boys and girls of all ages; those about schools 1 and 2 by boys and girls under ten years of age, and the Raritan Copper Works field by older boys and girls for tennis, baseball, track events, etc. Folk dancing will be taught in class rooms in schools on playground sites where there are pianos.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Collection of Taxes—Proceedings—Parties

City of Louisville v. Sonne.—Where property is assessed in the name of a person whose interest therein is not primarily liable for the tax, and suit to collect is brought against such person, he may bring into the suit by proper pleading the person who should pay the tax, and ask that his interest in the property be subjected.—Court of Appeals of Kentucky, 146 S. W. R., 739.

Contract with Water Company—Validity

Salina Waterworks Co. v. City of Salina.—Under a statute conferring on a city "full power and authority to contract for and procure waterworks to be constructed for the purpose of supplying the inhabitants * * * with water for domestic use, the extinguishment of fires," etc., the city had authority to contract with a water company for the rental of fire hydrants for any reasonable length of time; and a contract to pay for such service for 20 years, for which term the company was granted a franchise with a reservation to the city of the right to purchase the plant at any time after 10 years, with a further provision that if it did not elect to purchase by the end of the term the franchise and contract should be extended for an additional 20 years subject to the same terms and conditions, including the continued right to purchase, was not beyond its powers, and the provision for extension is valid and enforceable.—United States Circuit Court, 195 F. R., 142.

Officers—Salaries—Power to Fix

Sauerbrunn v. Board of Education of City of New York.—Greater New York charter, conferring on the Board of Aldermen the power to fix salaries, authorizes the board to increase or decrease them, and a reduction of the salary of an architectural draughtsman in the Bureau of Buildings in the Board of Education does not amount to his removal in violation of section 1,101, providing for the retention of a position by an employe except under specified conditions, though the civil service commissioners had previously graded the position of architectural draughtsman, but without establishing a grade including the position of the incumbent, especially since the grades, though including the incumbent, had been abolished.—New York Supreme Court, 135 N. Y. S., 84.

Defective Sidewalks—Contributing Negligence

Robertson v. City of Waukon.—In an action against a city for injury to a pedestrian, caused by a hole in a sidewalk, which remained after removal of a post, the fact that plaintiff himself removed the post a year and a half before the injury was material only as showing his knowledge of the existence of the hole and the danger naturally to be apprehended therefrom; the fact not establishing contributory negligence as a matter of law.—Supreme Court of Iowa, 135 N. W. R., 1093.

Revisal of Charter—Constitutional and Statutory Provisions

Gallup v. City of Saginaw et al.—Const. provides for municipal home rule, and requires the Legislature to provide by general law for the incorporation of cities, and gives to the electors of each city the power to frame, adopt and amend its charter and to pass all laws relating to its municipal concerns, subject to the Constitution and general laws of the State. Pub. Acts 1909 provides that each organized city shall be a body corporate, and that each existing city shall continue with all its present rights and powers until otherwise provided by law, and by a section that any city desiring to revise its charter shall do so in a prescribed manner, unless otherwise provided by charter. The city of Saginaw was incorporated, prior to the Constitution of 1908, by Loc. Acts 1905, and held that the act would be construed to prescribe a sphere of municipal action in local legislation with which the Legislature should not interfere, as provided by the constitutional mandate in obedience to which it was enacted, and that the city thereunder had the right to revise its charter.—Supreme Court of Michigan, 135 N. W. R., 1060.

Contracts—Breach—Damage

Peterson v. City of New York.—A contract for the construction of a section of the Croton aqueduct required the City of New York to designate a dumping ground, on which plaintiff could deposit material excavated from the shaft and tunnel. The ground was designated, to which plaintiff constructed a trestle with car tracks, and installed machinery to operate cars thereon, and used the same for some time to deposit material, when he was stopped, and after considerable delay another place was designated, and his trestle and machinery, previously installed, were thereby rendered useless, and had to be abandoned. Held, a violation of plaintiff's rights under the contract, for which he was entitled to recover damages.—Court of Appeals of New York, 98 N. E. R., 501.

Paving Contracts—Extra Work

Dunn v. City of New York.—A contract for street paving, with excavation to subgrade, and with provision for its removal to a certain depth "if rock be encountered," excludes recovery as for extra work because of the encountering, not of mere loose rock, which might be expected, but of native rock which should have been removed and replaced with soft filling under prior grading contracts, which with certificates of their performance were on file in a municipal office; the advertisement requiring bidders to satisfy themselves by personal examination of the location and such other means as they may prefer, and the contract providing that estimates of work to be done are approximate only, that the contractor is satisfied therewith, and that he shall not complain thereof, or assert any misunderstanding as to nature or amount of work to be done, that loss from any unforeseen obstructions or difficulties shall fall on him, and that he shall receive the agreed payments as full compensation for the whole work to be done under the agreement.—Court of Appeals of New York, 96 N. E. R., 495.

Telephone Franchise—Duration—Revocation

City of Louisville, Kentucky, Appt. v. Cumberland Telephone & Telegraph Company.—The right to use the city streets for telephone purposes, acquired under the perpetual charter of a telephone company, empowering it, with and by the consent of the City Council, to construct and maintain a telephone system in Louisville, Kentucky, was not revocable by the city at will, and did not expire when, by Ky. Stat. Louisville was made a city of the first class, with new and enlarged powers.—32 S. C. R., 572.

Streets—Grades—Presumption

Philpot v. Town of Tompkinsville.—Where a town was nearly a hundred years old and contained only a few hundred inhabitants, no presumption that the municipal authorities have fixed the grade of a street arises; the street never having been improved.—Court of Appeals of Kentucky, 146 S. W. R., 1092.

Ordinances—Publication—Sufficiency

City of Bardwell v. Tegethoff.—Under Ky. St., which provides for publication of an ordinance in a newspaper in the city or by posting in three public places, an ordinance changing the place of meeting of a city council, posted according to the statute, is valid though not published in a newspaper.—Court of Appeals of Kentucky, 146 S. W. R., 1093.

Personal Injury—Water Power—Proximate Cause

Woodie v. Town of North Wilkesboro.—In an action by one injured by being thrown from his buggy upon the running away of his horses, which were frightened by the overflowing of a city water standpipe, the failure to properly equip the standpipe was the proximate cause of the injury.—Supreme Court of North Carolina, 74 S. E. R., 924.

Salaries—Mandatory Statutes

City of Uvalde v. Burney.—Rev. St. 1895 provides that the city council, on or before the 1st of January next preceding each election after the first election under the title, shall fix the salary and fees of the office of mayor to be elected at the next regular election, and that the compensation so established shall not be changed during the term for which the officer was appointed or elected. Held, that the provision requiring the salary of the mayor to be fixed by the council on or before January 1 preceding the election was merely directory, so that his salary could be fixed after that date.—Court of Civil Appeals of Texas, 145 S. W. R., 311.

NEWS OF THE SOCIETIES

National Municipal League

The provisional program for the convention, Los Angeles, Cal., July 8-12, has been arranged as follows:

"Expert City Management" (annual address of the president), Hon. William Dudley Foulke, Richmond, Ind.

"Simplicity, Publicity and Efficiency in Municipal Affairs," Clinton Rogers Woodruff.

"Commission Government for Large Cities," Horace E. Deming, Esq., New York City; Prof. William Bennett Monro, assistant professor of government, Harvard University.

"Commission Government and City Planning," Ernest S. Bradford.

"Municipal Finances and Taxations," George Burnham, Jr., Philadelphia; Harvey S. Chase, Boston; Dr. Frederick A. Cleveland, Washington; Prof. Carl C. Plehn, University of California; A. C. Pleydell, secretary New York Tax Reform Association, New York.

"Excess Condemnation" (report of committee on), Robert S. Binkerd, secretary New York City Club, New York City.

"The Need of An Adequate Civil Service Law," Elliot H. Goodwin, secretary National Civil Service Reform League, New York City.

"Honesty Plus Efficiency," Meyer Lissner, Esq., Los Angeles.

Mayors' Association of Illinois

The annual convention was held at Evanston, May 29-30. Among the subjects discussed were the regulation of the social evil, the control of the public utilities, the purification of the water supply, the disposal of garbage and municipal markets.

The association decided to hold its meeting in 1913 in Rockford and elected the following officers:

President—William H. Stolte, Mayor of Chicago Heights.

Vice-President—William W. Bennett, Mayor of Rockford.

Secretary—Arthur G. Brown, Rockford.

Treasurer—J. M. Page, Mayor of Jerseyville.

Statistician—William J. Adkins, Chicago.

New York Fire Exposition

Madison Square Garden, New York, will be the scene of the first international conference and exhibition embracing every phase of fire prevention, fire protection and fire fighting, next October from the 2d to 12th, including Fire Prevention Day in New York State, October 9.

Fire Prevention Day is now annually set by proclamation of State Fire Marshal Ahearn, the former deputy fire chief of the New York City Fire Department. Its purpose is to provide an annual day for the cleaning up and removing of fire dangers such as accumulations of paper, rags, etc., from factories, warehouses and all business and residential buildings.

Fireproof building construction and all accessories, fire alarm systems, automatic sprinklers and fire extinguishers, motor fire engines, fire escapes and, in fact, every device and manufacture in the fields of fire prevention and extinguishment will be exhibited and demonstrated, and in addition an important

conference will hold sessions daily providing the first general consideration of the fire question by architects, builders, engineers, insurance men and fire chiefs and fire fighters on the same platform.

The Mayors of the principal cities of the United States have already appointed their fire chiefs and commissioners as delegates to attend the conference and exhibition.

The committee of this Fire Conference and Exposition includes Thomas J. Ahearn, New York State Fire Marshal; Joseph Johnson, New York City Fire Commissioner; D. E. Waid, representing the American Institute of Architects; Charles H. Cole, Fire Commissioner, Boston, Mass.; Chief Charles E. Swingley, of St. Louis, Mo.; Richard H. Johns, President Board of Fire Commissioners, Baltimore, Md.; Charles F. Seyferlich, Chicago, Fire Marshal; Chief Edward A. Waters, Philadelphia, Pa.; A. Friedlander, editor, Firemens Herald; W. P. Comstock, editor, Architecture and Building; Guy W. Eskridge, editor, Fireproof Digest; I. G. Hoagland, editor, Insurance Engineering; C. W. Lansing, editor, Brick and Clay Record; F. W. Shepperd, editor, Fire and Water Engineering; Russell F. Whitehead, editor, Architectural Record; E. Jay Wohlgenuth, editor, Fire Protection; Henry R. Yates, Fire Chief, Schenectady, N. Y., and secretary New York State Association of Fire Chief Engineers; John Stephen Sewell, late major Engineers, United States Army and United States Government expert on fire protection; C. A. Palmer, Michigan Fire Marshal and president Fire Marshals Association of North America; Felicien Michotte, the French fire protection expert and president and engineer of the Society for the Prevention of Accidents and Fire, Paris, France. The committee also includes a number of other fire chiefs, insurance officials and fire marshals with A. D. V. Storey, 1269 Broadway, secretary and general manager.

Awards will be made for new inventions of value and merit, a campaign of fire prevention education will be waged in the interests of the general public and the practical work of fire fighting will be shown with life saving exhibitions by firemen with scaling ladders, nets, the life line and similar equipment.

A. D. V. Storey, 1269 Broadway, New York, is secretary of the exposition.

New England Water Works Association

The June outing of this association was held at the Cape Cod Canal, Wednesday, June 26, 1912. The Boston Society of Civil Engineers had been invited to join in the excursion. At Buzzards Bay the work there was inspected, including the new large roller lift bridge. Special electric cars were then taken to Onset, where lunch was served at Ronald's at 12:30. Another train took the party to Sagamore for view of work in progress there, thence to point near Sandwich when by a short walk the east outlet of canal can be seen, thence to office of Canal Company at Sandwich, where a model of the canal was inspected.

Fifteenth International Congress on Hygiene and Demography

The organization of the congress to be held in Washington September 23-28, include the following sections and officers, dealing with matters of municipal interest:

Section V. Control of Infectious Diseases. President, Dr. Hermann M. Biggs, general medical officer Department of Health, New York City; vice-president, Dr. Arnold C. Klebs, Ouchy-Lansanne, Switzerland; secretary, Dr. Charles F. Boldnan, acting assistant to the general medical officer Department of Health, New York City.

Section VI. State and Municipal Hygiene. President, Dr. Frank P. Wesbrook, professor pathology and machinology, University of Minnesota, Minneapolis; vice-presidents: Dr. John N. Hurty, secretary State Board of Health of Indianapolis, Indiana; Dr. Charles V. Chapin, superintendent of health, Providence, R. I.; secretaries: Dr. Herbert D. Pease, New York; Dr. Marshall L. Price, secretary State Board of Health, Maryland, Baltimore.

Section VII. Hygiene of Traffic and Transportation. President, Dr. Rupert Blue, surgeon-general, United States Public Health and Marine-Hospital Service, Washington; vice-president, Dr. Ennion G. Williams, State Commissioner of Health, Richmond, Va.; secretary, Dr. John W. Kerr, assistant surgeon-general, United States Public Health and Marine-Hospital Service, Washington.

Section IX. Demography. President, Prof. Walter F. Willcox, professor economics and statistics, Cornell University, Ithaca; vice-presidents, Dr. John S. Billings, United States Army (retired), New York; Mr. Frederick L. Hoffman, statistician, Newark, N. J.; secretary, Dr. Cressy L. Wilbur, chief statistician for vital statistics, Census Bureau, Washington.

Following the precedents established by previous conferences, an exhibition on health will be held from September 16 to October 4, at which the hygienic and demographic work of the United States and its dependencies will be illustrated. To this end the Governors of the several States have been invited by the Federal Government to appoint committees to co-operate with the committee on organization. Twenty-six Federal bureaus are also preparing to participate and many of the larger municipalities and institutions of learning and research will be represented by exhibits. The necessity for the standardization of hygiene methods and the extension and co-operation of the work of Federal, State, municipal and private health officers is one of the points which it is specially desired to bring out. The exhibition will be divided into the following groups:

Group I. Vital statistics and demography. Group II. Growth and nutrition; food. Group III. The hygiene of infancy and childhood (including prevention of infant mortality and school hygiene). Group IV. The physiology and hygiene of exercise. Group V. Housing. Group VI. Industrial and occupational hygiene. Group VII. Communicable disease. Group VIII. State and municipal hygiene. Group IX. Care of the sick; life saving. Group X. Hygiene of traffic and transportation. Group XI. Military, naval and tropical hygiene. Group XII. Sex hygiene.

Among the papers to be presented will be the following:

Dr. W. E. Adeney, Dublin, Ireland, "Sewage Disposal by Dilution, with Special Reference to Conditions in Tidal Waters and Large Streams." Section VI.

Herr Anklam, Berlin, Germany, "Water Purification in Europe by Biological Methods." Section VI.

Major Percy M. Ashburn, U. S. A., Washington, D. C., "Disposal of Wastes." Section VIII.

Herr Med. S. Auerbach, Frankfurt A. M., Germany, "The Campaign Against Noise." "A Requisite in Nerve Hygiene." Section VII.

Dr. Adolph Baginsky, Berlin, Germany, "Hygiene of City Babies." Section III. "Diseases Contracted During School Life." Section III.

Dr. Clarence John Blake, Boston, Mass., "The Deleterious Effect of Unnecessary Noise." Section IV.

Dr. Rupert Blue, Washington, D. C., "The Municipal and State Control of Plague." Section VI.

Hon. John Burns, London, England, "City Planning." Section VI.

Dr. Henry L. Coit, Newark, N. J., "The Work of Medical Milk Commissions in the Campaign for the Betterment of Milk Production and Distribution." Section VI.

Major Carl R. Darnell, U. S. A., Washington, D. C., "Water Purification." Section VIII.

Robert W. De Forrest, New York City, "Sanitary Aspects of Housing Problems." Section VI.

M. Dienert, Paris, France, "The Sterilization of Water by Ozone, by Ultra-Violet Rays, and by Chlorine Compounds." Section VI.

Major Joseph H. Ford, U. S. A., Washington, D. C., "Disposal of Wastes." Section VIII.

Mr. J. Gilbert Fowler, Manchester, England, "Sewage Purification by Oxidation Methods." Section VI.

Mr. George W. Fuller, New York City, "Water Purification in America by Mechanical Methods." Section VI.

Mr. Allen Hazen, New York City, "Water Sterilization by Chemical Methods." Section VI.

Dr. P. G. Heineman, Chicago, Ill., "A Bacteriological Examination of Market Milk." Section I.

Mr. Rudolph Hering, New York City, "Garbage and Refuse Disposal." Section VI.

Dr. John Howland, St. Louis, Mo., "The Nutritive Requirements in Early Infancy." Section II.

Dr. Arthur M. Hume, Owasso, Mich., "The Necessity for the Maintenance of Sanitary Departments by Common Carriers."

Dr. A. C. Houston, London, England, "Purification of Water by Storage." Section VI.

Dr. L. O. Howard, Washington, D. C., "Importance of Flies and Other Insects as Carriers of Infectious Diseases." Section V.

Dr. Karl Imhoff, Bredene bei Essen, Germany, "Methods of Sludge Disposal." Section VI.

Lieutenant-Colonel Jefferson R. Kean, U. S. A., Washington, D. C., "Water Purification." Section VIII.

Dr. A. Kemna, Antwerp, "Water Purification in Europe by Biological Methods." Section VI.

Prof. Dr. S. Kitasato, Tokyo, Japan, "The Municipal and State Control of Plague." Section VI.

Dr. Ernst J. Lederle, New York City, "Sanitary Control of Local Milk Supplies Through Local Official Activities." Section VI.

Mr. P. A. Surgeon Allan J. McLaughlin, Washington, D. C., "The Prevention of Water-borne Diseases in River Traffic." Section VII.

Mr. Benjamin C. Marsh, New York City, "Transportation and Urban Health." Section VII.

Lieutenant-Colonel Chas. F. Mason, Washington, D. C., "Water Purification." Section VIII.

Prof. Dr. F. Mesnil, Paris, France, "Importance of Flies and Other Insects as Carriers of Infectious Diseases." Section V.

Dr. Charles E. North, New York City, "Hygiene of the Transportation of Milk Supplies." Section VII.

Dr. H. Cooper Pattin, Norwich, England, "Public Health Administration in England from the Standpoint of the County Borough." Section VI.

Dr. Watson S. Rankin, Raleigh, N. C., "The Model Law for Municipalities." Section IX.

Prof. Renk, Dresden, Germany, "Air Pollution (smoke, street dust, etc.)." Section VI.

Dr. Samuel Rideal, London, England, "Water Sterilization by Chemical Methods." Section VI.

Prof. W. T. Sedgwick, Boston, Mass., "Sanitary Regulations of Watersheds for Unfiltered Water Supplies Not Subject to Filtration." Section VI.

"Prevention of the Pollution of Roadbeds and Waterways in Modern Transportation." Section VII.

Dr. George A. Soper, New York City, "Hygiene of Street Traffic." Section VII.

Magistratsbaurat Julian Szalla, Berlin, Germany, "Smoke, Street Dust and Other Air Pollutions." Section VI.

Dr. J. Ashburton Thompson, Sydney, N. S. W., Australia, "The Municipal and State Control of Plague." Section VI.

Dr. John C. Thresh, London, England, "Purification of Water by Storage." Section VI.

Dr. W. Owen Travis, Hampton, Middlesex, England, "Methods of Sludge Disposal." Section VI.

Mr. John D. Watson, Birmingham, England, "Sewage Purification by Oxidation Methods." Section VI.

Dr. Eugene Würzburger, Dresden Saxony, "The Present Position of Municipal Vital Statistics in Germany." Section IX.

Mayor's Association of New York State

The third annual conference was held in Utica June 11-12 at the Hotel Utica. About 150 members were present. Mayor Baker made the address of welcome. The advisory committee presented its report on a municipal information bureau, which was approved. The objects of the bureau were stated to be: To keep all municipalities posted regarding legislation; to furnish statistics; to distribute plans adopted by any city; to keep officials informed regarding municipal innovations; to distribute reports.

The following addresses were made: "Municipal Home Rule," by Robert S. Binkerd, secretary of the City Club of New York. The speaker advocated the passage of one general statute stating the powers of all municipalities of a class.

"Aldermanic Activities in Municipal Government," by Clinton Rogers Woodruff, secretary National Municipal League. He said that commission government was a substantial contribu-

tion to American municipal forms, but not the last word.

"Next Steps in Dealing With the Social Evil in Municipalities," by George J. Kneeland, director of the Chicago Vice Commission.

"Testing the Efficiency of Public Schools," by Prof. Paul A. Hanus, Howard University.

"Municipal Lighting Problem," by George E. Van Keunen, chairman New York State Conservation Commission. This paper was largely an explanation of the plans of the State Conservation Commission.

"Readjusting a City for Greater Efficiency," by Arnold W. Brunner. After the discussion of this paper, a resolution offered by Mayor Irving, Binghamton, stating that it was the sense of the conference that every city should have a committee on city planning, was adopted.

"A Model Health Department," by Prof. Selskar M. Green, Boston.

"The State and the Municipality," by Lieutenant-Governor Thomas F. Conway.

"The End of Poverty in Cities," by Frederic Almy, secretary Buffalo Charity Organization. The speaker stated that in 1876 10 per cent. of the population of Buffalo were on the poor books, now there are less than one per cent.

"Street Railway Franchises," by Delos F. Wilcox, New York. The speaker said that every large city should have a local franchise commission.

"Lighting of Civic and Business Centers," by Mr. Axford, Schenectady. The speaker said that special lighting schemes are needed in every city of over 5,000 population.

On the last day of the conference a trip was made to Trenton Falls. Here after a lunch, the resolutions were passed. The resolutions referred mostly to topics discussed in the paper. They are too long for reproduction here.

Officers were elected as follows:

President, John J. Irving, Binghamton; vice-president, James T. Lennon, Yonkers; treasurer, Frank J. Baker, Utica; secretary, William P. Capen, New York. They were unanimously elected.

President Irving appointed the following standing committees:

Advisory Committee—Edward Schoeneck, Syracuse; Rosslyn M. Cox, Middletown; Edwin W. Fiske, Mt. Vernon; Thomas H. O'Neill, Auburn.

Committee on Municipal Bureau—John J. Irving, Binghamton; Peter C. Foley, Olean; Frank J. Baker, Utica; Hiram J. Egerton, Rochester; Otto Pfaff, Oneida.

Legislation—Charles C. Duryee, Schenectady; John K. Sague, Poughkeepsie; J. H. Dealy, Amsterdam; Albert R. Kessinger, Rome; James B. McEwan, Albany; Francis M. Hugo, Watertown; Cortland A. Miller, corporation counsel, Binghamton.

E. A. Moree, of New York, was appointed assistant secretary.

Playgrounds and Recreation Association of America

The sixth annual convention of the association was opened at the Auditorium, Cleveland, O., with a large attendance. The chief business was the election of officers, which resulted as follows: Joseph Lee, Boston, Mass.,

president; Harold F. McCormick, Chicago, first vice-president; William Kent, California, second vice-president; Robert Garrett, Baltimore, Md., third vice-president; Gustave T. Kirby, New York, treasurer; St. George Bryan, Richmond, Va.; Ruth Cheney, South Manchester, Conn.; Mrs. Arthur G. Cumner, Jacksonville, Fla.; H. McK. Landon, Indianapolis, Ind.; Otto T. Mallory, Philadelphia, Pa.; Mrs. William H. Moore, New York; Elihu Root, Jr., New York; Mrs. Charles Howland Russell, New York; Robert H. Strong, Portland, Ore., and Harris Whittemore, Naugatuck, Conn., directors.

In his annual address, President Jos. Lee spoke on "Play for the Home." "The most exclusive social barrier that exists in this country to-day has cut in two the society of children whose ages are 17. This should be broken down and we can do it with the playground. All children should be taught to play. We should aim to improve the literature of our children, teach them all to sing and have them all learn to dance and enjoy recreation," was the keynote of his address.

In his annual report, Secretary Braucher included reports from 257 cities in which playground work is being carried on. He stated that the number of cities with organized recreation centers under municipal control has increased during the year from 24 to 37. The number of local playground associations, he said, has increased from 78 to 115. The amount of money raised for playgrounds by bond issues in 19 cities has been \$4,500,000.

A general annual holiday to be known as Playground Day and to be observed in every State was urged at one of the sessions. The proposal was made by W. J. McKernan, supervisor of city playground in Newark, N. J. McKernan said his city has observed Columbus Day, October 12, as a playground holiday since that date was made a legal holiday in New Jersey. Because of the prejudice against the establishment of any additional holidays, this day was selected. In many States October 12 is a legal holiday, but the observance is not general. It is believed that it is an ideal time for the playground holiday. President Lee and other members of the congress have expressed themselves as favoring this playground holiday. The delegates will return to their home States and use all their influence to have the day established. It is said that, by combining Columbus Day and Playground Day, the value of the holiday is enhanced and a good effect on the playground movement will result.

The abandonment of the practical side of playground and recreation work at congresses and spending so much time on the theoretical side was deplored by many of the members of the association.

The Cleveland Playground Commission asked the directors of the association that at the next session the first day be devoted to the practical side of the work. They also asked that more space be given to the practical work in *The Playground*, the organ of the association. They want the proceedings of this congress published in bulk in the next issue of the paper so that they may study what has been done, instead of having the proceedings spread out over a year in the publication. Quick action and results are what these men want, and their wishes will be considered by the directors.

While the general sessions are being held in the Chamber of Commerce building, many were in attendance on Thursday morning also at the Goodrich house in St. Clair street, a social settlement center, where an interesting exhibition of views showing the work being done in the school gardens of Cleveland under the supervision of Miss Louise Klein Miller, superintendent of playgrounds in the city of Cleveland, and a former teacher in the Day-ton schools.

Here were shown the progress of gardens, in the many schools of Cleveland, where facts concerning irrigation, insects, flowers exhibitions, etc., are taught to the many children interested in the work.

There was much to see at Goodrich house, for instance, pictures of the garden festivals with the results of the season's work, educational toys for very young children, and one large bulletin board, with pictures of a squalid district, where in a "Boys' War," one child was killed and 16 jailed and accompanying the feature is the pertinent inquiry, "Whose fault is it, the boys' or the city's?"

Garden plans, ribbons and medals presented as rewards of excellence along these lines, flower show pictures, and other things along the same order, were also a part of this exhibition.

Several striking utterances were made by Joseph Lee, of Boston, E. B. De Groot, general director of Chicago's South Side playgrounds, etc., among which were, "One Touch of Baseball Makes the Whole World Akin." "When we see how much the children enjoy and patronize the motion picture of to-day, why not make them part of them, in taking series of views of their activities in the playground centers, and thus even more greatly interesting them from the personal viewpoint?"

Informal discussion was indulged in during which opinions were voiced by delegates from all over the United States regarding desirable games to inculcate into the playground life, among those suggested being "Tin Can Shinny," for boys on roller skates, rope contests for boys, both in feats of strength and tying knots, etc. Kite flying, Mr. Vaile, of California, giving interesting reminiscences of his boyhood, which was spent in Japan, where myriads of children participate in this charming sport. The making of miniature fleets, volley and tether ball, the sand pile, marbles and others.

E. B. DeGroot, of Chicago, a prominent playground worker, voiced it as his opinion that the amusements provided for the young people of this country were all too "ready made and mechanical." They ride, said he, on the chutes, make the glides, and all of their fun is made for them by machinery, no effort on their part being made at all necessary. It is to impassive and the dancing of to-day has become too passive. Instead of the active Virginia reel, quadrille and Captain Jenks of the olden days, all of the dances of to-day have been reduced to the waltz and the two-step. The dances of the old days would make the people so tired in a couple of hours that they would have had plenty of recreation.

The city for the next annual meeting was not selected. The general sentiment expressed seemed to be in favor of some city in the South for 1913.

PERSONALS

ATWATER, FREDERICK, Bridgeport, Conn., has been reappointed as a member of the Paving and Sewer Commission.

GORGOS, COL. WM. C., chief sanitary officers, at Panama for the United States government, has been appointed chairman of the Boston Board of Health.

GURNEY, W. J., Lehi, Utah, has been appointed Superintendent of the Water Works.

HUNTER, W. W., Augusta, Ga., City Engineer, has been named as Director of Streets and Highways.

OSGOOD, MANTEY, Lima, O., has been appointed City Engineer of Ann Arbor, Mich.

SCEERY, EDW., Paterson, N. J., Vice-President of the Park Commission, has been elected President.

WATTS, Deputy Superintendent, Boston, Mass., who has been a member of the Boston Police Department for thirty years, has resigned.

The following mayors have been elected:

VIRGINIA.

Alexandria—Thos. A. Fisher.
Charlottesville—A. V. Conway.
Harrisburg—John H. Downing.
Suffolk—C. C. Vaughan.
Norfolk—James G. Riddick.
Manchester—Chas. W. Ramsburg.
Fredericksburg—J. P. Rowe.
Roanoke—John W. Woods.
Danville—Harry Wooding.
West Point—A. W. Eastwood.
Waverly—P. M. Kilmartin.
Cape Charles—T. J. Burbage.
East Radford—Wm. Dolp.
Pocahontas—John Roberts.
Buena Vista—J. H. Lake.
Bristol—George M. Warren.
Clinton Forge—A. B. Davies.
Crewe—Dr. Adams.
Lynchburg—G. W. Smith.
Highland Park—F. F. Rennie.
Barton Heights—W. L. Raglan.

TENNESSEE.

Martin—J. T. Perkins.

Calendar of Meetings

July 8-12.

National Municipal League.—Annual Meeting, Los Angeles, Cal.—Clinton Rogers Woodruff, Secretary, 705 North American Building, Philadelphia, Pa.

July 10-12.

Fire Marshals' Association of North America.—Annual Convention, Detroit, Mich. Fire Marshal Palmer, Secretary, Lansing, Mich.

July 9-13.

International Association of Chiefs of Police.—Annual Convention, Toronto, Ont.—Major Richard Sylvester, Superintendent of Police, Washington, D. C., President.

August 28-30.

Virginia State Firemen's Association.—Twenty-sixth Annual Convention and Tournament, Roanoke, Va.—L. E. Lookabill, Vice-President, Roanoke.

August 26-30.

International Association of Municipal Electricians.—Seventeenth Annual Convention, Peoria, Ill.—Clarence R. George, Secretary, Houston, Tex.

September 17-20.

International Association of Fire Engineers.—Annual Convention, Denver, Col.—James McFall, Secretary, Roanoke, Va.

September 18-19.

New England Water Works Association.—Thirty-first Annual Convention, Washington, D. C.—Willard Kent, Secretary.—Headquarters, Boston, Mass.

September 24-26.

Central States Water Works Association.—Sixteenth Annual Convention, Detroit, Mich.—R. P. Bricker, Secretary, Shelby, O.

November 12-15.

American Society of Municipal Improvements.—Annual Convention, Dallas, Tex.—A. Prescott Folwell, Secretary, 50 Union Square, New York.

MUNICIPAL APPLIANCES

Continuous Electric Blue Print Machine

The Revolute Machine Company, 417 E. Ninety-third street, New York, manufacture the Everett-McAdam continuous electric blue print machine, shown in the illustrations. The elementary parts of the machine consist of a rotating transparent cylinder with a source of light inside and means for bringing the tracings and paper into

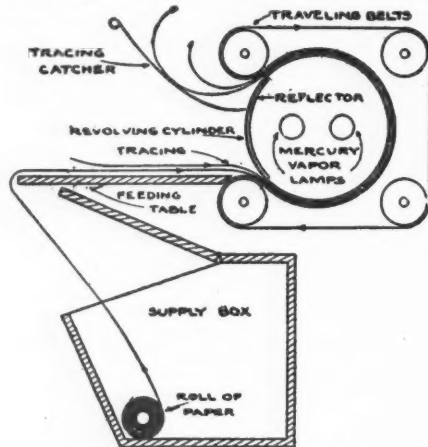
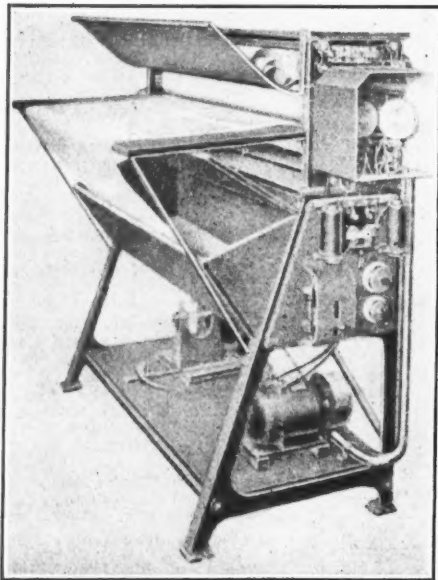


DIAGRAM CONTINUOUS BLUE PRINT MACHINE.

and out of position continuously upon the surface of the cylinder to effect the printing. The cylinder lies in a series of narrow belts which traverse three-fourths the circumference and return over rollers at the back. Through the cylinder are placed two mercury vapor electric lamps, which are longer than the cylinder, so that the intensity of the light is uniform, clear to the ends. The paper and tracings feed in between the belts and the glass cylinder, and rotate together with it, the printing being done in one revolution.

The paper passes over the table from the storage box, as shown in cuts, and the tracings are laid out on the paper as it passes into the machine. The paper and tracings are caught by a scoop on top as they come out.



REVOLUTE BLUE PRINT MACHINE.

The cylinder is of glass $8\frac{1}{4}$ inches in diameter and 45 or 60 inches long for the 42 and 54-inch machines respectively. It is made in one piece so there are no streaks in the blue print due to interference of light at the joint. The light is obtained from mercury vapor lamps, rich in chemical light. The lamp requires a current of 7 amperes at 110 volts, and the standard machinery is equipped with two.

The contact between tracing and paper is secured by means of 30 narrow belts side by side, instead of a single broad one. The tension of all belts is adjusted at one time by turning a screw. The small diameter of the cylinder aids very materially in securing good contact.

The motor is $1\frac{1}{6}$ h. p. of the enclosed type, running at constant speed, and operates on the same circuit that supplies the lamps. On 110 revolutions it requires 1.8 amperes.

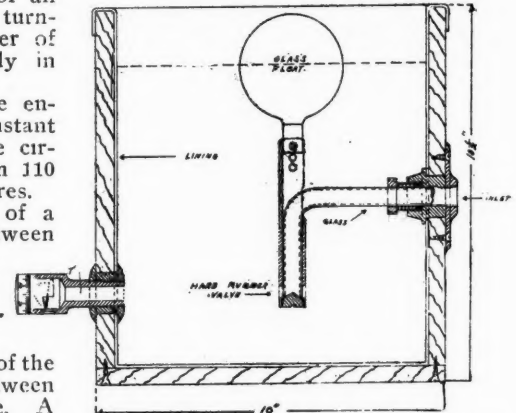
The speed controller consists of a leather shod wheel running between two discs, where shafts are about six inches apart, so that when the wheel is moved towards the center of one disc it moves towards the rim of the other. The range of speed is between zero and fifteen feet per minute. A foot lever changes the speed and an indicator registers it. The rotation of the cylinder may be stopped by pressing a button on the base board with the foot, when the cylinder can be turned in either direction by hand. With regular rapid electric blue print paper the speed is 4 or 5 linear feet per minute. The spaces occupied are 2 feet by 5 feet 4 inches and 2 feet by 6 feet 7 inches for the two sizes, respectively, the height of both being the same, 5 feet 5 inches.

Non-Corrosive Constant Level Box

Wallace & Turnan, 136 Liberty street, New York City, are putting upon the market a non-corrosive constant level box for regulating the flow of alum and bleach solutions in filtration and disinfection plants. The features of this box are the resistance of all its parts to the corrosive action of alum and bleach, the reliability of the float valve to maintain a constant level

of solution in the box, and the design of the orifice so that it can be adjusted from zero to maximum flow.

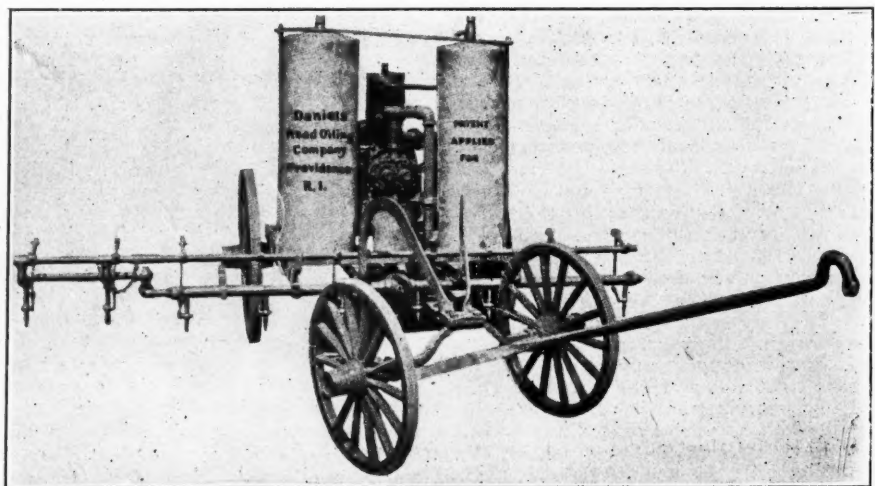
As shown in the accompanying diagram, the inlet pipe of heavy glass tubing, leading to the hard rubber float valve, is made tight by a hard rubber bushing packed with asbestos. The float valve is of the needle type and consequently self-cleaning. The adjustable orifice is a cam-like arrangement and is adjusted to read either in gallons of solution or liters per hour. An additional advantage of using glass and hard rubber in this constant level box is the fact that acid may be used to dissolve off any carbonate of lime formed without any danger of corroding the working parts.



DEVICE FOR REGULATING FLOW OF CHEMICAL SOLUTION.

Road Oil Spraying Machine

The Daniels Road Oiling Company, 171 Westminster street, Providence, R. I., have placed on the market an oil spraying device which consists of a light truck to be attached to the rear of an oil wagon carrying the necessary machinery. The principal parts are a gasoline engine with tanks for gasoline and water, a pump and suitable spray pipes, valves, controlling levers and operator's seat. The gasoline engine is directly connected to the rotary pump. A lever at the right of the engine opens and closes all shut-off valves. The machine will oil a strip six or eight feet wide—the greater width being covered with a swing extension. The nozzles may be opened separately so as to deliver more oil in the center if desired. The wagon frame is built of iron, a goose-neck



DANIELS ROAD OILING MACHINE TO BE ATTACHED TO TANK WAGON.

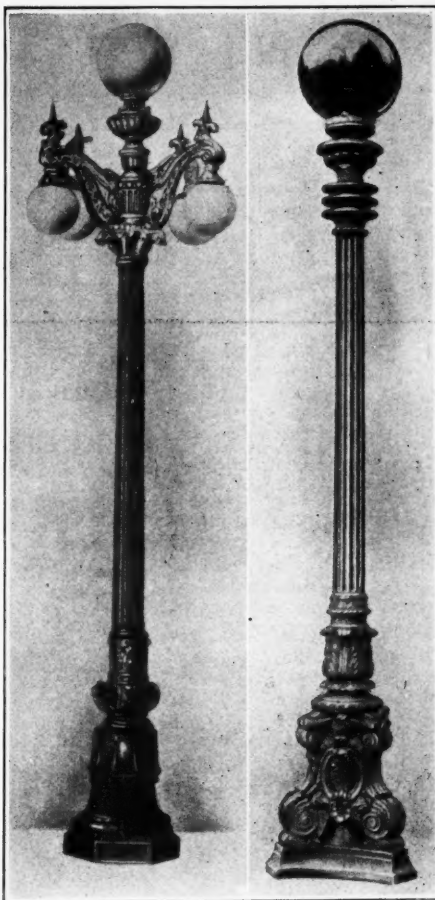
construction allowing the forward wheels to turn under, so that the tank wagon hauling it may be turned around in a street without any allowance for the trailing machine. The pump and engine are secured to a cast iron bed plate. The water and gasoline tanks are galvanized inside and out, a lower compartment of the gasoline cylinder being arranged to hold tools.

Connection is made with the hook in end of tongue, to an eye attached to the axle and with a rubber hose to a union on the tank. For filling a wagon from a tank car, the suction hose is connected from the car to a union under the seat, and the pump is operated without changing connections to the wagon. In the same manner oil may be pumped from barrels or from one tank wagon to another. The outfit weighs 800 pounds complete.

Bucyrus Revolving Shovel

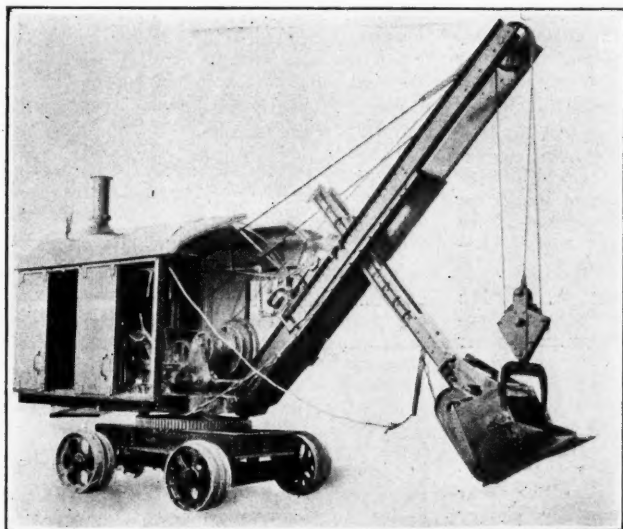
The Bucyrus Company, South Milwaukee, Wis., have placed on the market a complete line of light revolving shovels. The increasing cost of common labor has created a demand for mechanical appliances for handling all sorts of structural material, not the least of these being common earth. The field of the small shovel is widening, particularly in municipal work. A few years ago a steam shovel elsewhere than on railroad work was a curiosity, now they are not uncommon in cellar digging, sewer construction and street work. As the cost of labor goes up, the field of the shovel widens. When working to advantage the shovel will handle dirt for $4\frac{1}{2}$ cents per yard for labor and perhaps an equal sum for fuel. To load a yard of dirt in a wagon costs often 30 cents and will cost more if labor increases in cost. Hence a shovel becomes economical to use even in situations where it works to considerable disadvantage.

In the Bucyrus shovel the design is simple and strong. The boom is thoroughly braced and of heavier construction than is usual. The sills of the truck frame are tied together by connecting members. These two parts are usually the first to give way on a small shovel. The machinery is mounted on single solid cast steel bases. Mounted on the truck frame



ELECTRIC LIGHT POSTS.

is a heavy steel casting which combines the swinging gear, roller track and the center journal, or gudgeon, which supports the revolving frame. This casting is machined at one setting. The shovel may be equipped with a long boom and dipper handle for sewer digging. The smallest sized Bucyrus, called 14 B., has a $\frac{3}{8}$ -yard dipper, weighs $15\frac{1}{2}$ tons, has a clear lift of 10 feet 6 inches, will cut a level floor 3 feet 6 inches wide, at an 8-foot elevation it will cut 47 feet 6 inches wide; size of main engines is 5 by 6 inches; thrusting engines, 4 by 5 inches; swinging engines, 4 by 5 inches. Other Bucyrus revolving shovels have dippers of $\frac{7}{8}$, 1 and $1\frac{1}{4}$ yard capacity.



BUCYRUS REVOLVING SHOVEL.

Standard Low Charging Mixer With Cart Charger

This outfit is designed for rapid work and to do away with the use of wheelbarrows for bringing the materials from the piles to the mixer. Several carts, each having capacity for one batch, for the mixer are used and are taken to the piles and the proper proportions for one batch of stone or gravel, sand and cement are placed in the carts. By using the hoist at the mixer with a rope or cable for attaching to the carts, they are brought on to the mixer platform where the complete batch is dumped into the mixer as soon as the previous batch is discharged. The cart is then taken back by the man who guides it to the mixer and the rope removed from the empty cart and attached to another loaded cart and the process is repeated.

By using several carts, the workmen shoveling or filling them can always load the empties and have several batches ready if there is a few moments delay at the mixer, for moving or for any reason.

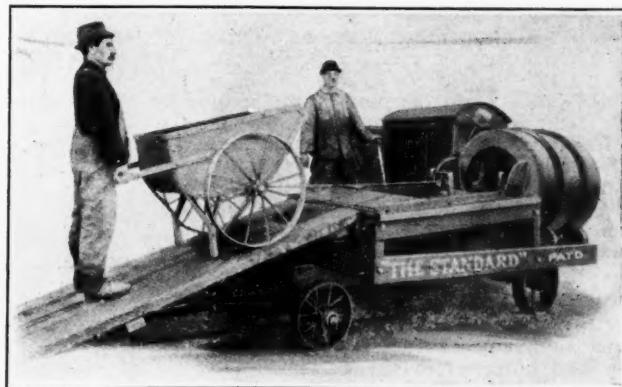
With the carts there is no clogging and no necessity for pounding on the bottom, or using other methods to make the discharge clear, as is so often necessary on charging hoppers and side loaders.

The man operating the engine on gasoline outfits also operates the hoist, and the automatic water tank, and it is not necessary to have a man on the mixer platform, consequently, one workman less is required at the mixer.

The manufacturers claim that with this outfit from one to three less workmen will be necessary for bringing the materials to the mixer and that a greater amount of work will be accomplished. It is also stated that the charge can be delivered from the cart in six seconds—much less than the time required for elevating and discharging an ordinary hopper—hence the increase in capacity.

Electric Light Posts

Ornamental lighting standards are made by Dearborn Foundry Co., Chicago, Ill. The post on the left, carrying five lights, is 12 feet high; base 22 inches square in section; height of base 2 feet 6 inches; size of shaft above base 6 inches in diameter, at neck 5 inches. Post on right is for safety islands. It is 10 feet high, size of base and diameter of shaft same as other. Both globes 18 inches in diameter with 8-inch fitters. The Dearborn Company also manufacture a variety of simpler and less expensive designs, carrying from one to five lights.



CHARGING DEVICE FOR STANDARD MIXER.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago—Prices are decidedly firm. Quotations: 4-inch, \$27; 6 to 12-inch, \$25; 16-inch and up, \$24.50. Birmingham—There is no change in the situation. All shops are working on full time with yards depleted of any considerable stock and the output moving rapidly. The tendency is to advance prices July 1. Recent advances are firmly held while waiting on what may happen if another rise in pig iron occurs. Quotations: 4 to 6-inch, \$23.50; 8 to 12-inch, \$22.50; over 12-inch, average, \$21.50. San Francisco—Most of the business is in small lots, but a fair aggregate tonnage is maintained. New York—Business appears to be a little brisker than in recent weeks. Quotations: 6-inch, \$21 to \$23.

Lead.—The consumption is good and the market is firm but dull. Quotations: New York, 4.50c.; St. Louis, 4.375c.

Motor Fire Apparatus.—According to statistics compiled by *The Power Wagon*, \$1,000,000 worth of motor fire apparatus was ordered or delivered during the month of May by Americans. The transactions involved the sale of 166 machines to 89 municipalities. It is estimated that during the year \$3,000,000 of fire apparatus will be purchased. The following are some of the details regarding the larger cities. New York has 43 automobiles in use and will spend about \$1,000,000 for the same purpose within a year. Chicago bought 21 pieces from a single manufacturer. Boston, Pittsburgh, New Orleans, Detroit, Cincinnati and Columbus will buy from \$50,000 to \$400,000 for motor apparatus in the immediate future.

Fire Extinguisher.—Several hundred people of McKeesport, Pa., and vicinity recently witnessed a demonstration of a fire extinguisher manufactured by the Standard Fire Extinguisher Co., McKeesport, Pa., successor to Miles Susee Co., Ltd. A fire was built in the street, the flames reaching the height of a three-story building. Upon signal, the fire was extinguished in ten seconds.

Safety Fire Box.—The Jacobs-Shubert United States Firebox Company, Coatesville, Pa., has placed on the market a fire box designed by W. H. Jacobs which, it is claimed, will eliminate boiler explosions. A very satisfactory public test was recently given of its efficiency. While designed primarily for locomotives, it is stated that the principle is applicable to other boilers.

Boiler Tubes.—The National Tube Co., Pittsburgh, Pa., has published an attractive booklet on "The Modern Boiler Tube." An account is given of the evolution and development of the boiler tube. A number of expert opinions on its efficiency are given at length and the facts are confirmed by the result of a series of standard mill tests. The technical matter is mostly from the proceedings of the American Society for Testing Materials and the International Boiler Makers' Association.

Asphalt Oil.—The Freeport Mexican Fuel Company has acquired extensive oil land holdings in the Tampico district of Mexico, and is preparing to become a large producer of crude oil, which will be concentrated at Freeport.

Rights to "Cement Gun."—Supreme Court Justice Gerard has handed down a decision upholding the right of the General Cement Products Company and the New York Cement Gun Company to the exclusive use of the trade phrase "cement gun" and restraining the Cement Appliances Company from using the words to describe one of its appliances. Justice Gerard said:

"A number of years ago Carl M. Akeley, employed as a naturalist in the Field Museum of Chicago, in the endeavor to devise a means to coat the exterior of the Field Museum building, part of the World's Columbian Exposition, produced a device by which he applied a coat of gypsum to the outer walls of the building. This device works so successfully that a company was organized and a large sum of money expended in putting the machine in commercial shape.

"The device was at first called a 'plastering machine' and later on the name 'cement gun' was suggested and the name thereafter used in connection with this device, and these machines were put upon the market. The machine is described as one which takes all the constituents of the finished products, mixes the solid constituents, sand and cement, in the proper proportions, conveys them in a dried state to the nozzle, brings about in that nozzle a combination of the dry particles with the liquid, and carries the mixture, which is then cement mortar in the act of setting, to the point of application.

"It is the principle of the trade mark and trade-name law that words, which are not new, may be used to indicate a substance or article of which they are not properly descriptive, if their application to such purpose is new and to some extent a matter of invention."

Composition Rubber Matting.—The Flintkote Manufacturing Company, 66 Beaver street, New York, N. Y., manufactures a composition rubber matting sold under the trade name Adamat. It is recommended for use on the floors of hospitals, schools and other public buildings. It is composed of a felt mat base with a gum surfacing on both sides, making both sides usable as a walking surface. It is said to have no odor. The surface is not slippery, although it is not corrugated. Adamat is claimed not to harden or oxydize.

Receivership.—Percy Jackson, receiver of the United Engineering & Contracting Company, has been ordered to settle all claims of the Gotham Company, against the alleged bankrupt for \$30,000. The order was signed by Judge Hough in the United States District Court.

Graetzin Lamp.—Robert A. Jordan has written a letter to the city government of Haverhill, Mass., calling their attention to the merits of a gas lamp manufactured by his clients, Ehrich & Graetz, Berlin, Germany. It is an inverted boulevard light, which has been tried experimentally in Boston. The following is the report of a test made by E. N. Wrightington. Candle power at 20 per cent angle—Candle power 69.36, consumption 2.64; candle power 92.10, consumption 3.00; candle power 131.53, consumption 3.48.

Pumping Engine.—John Cowell, Director of Public Service, Toledo, O., has awarded a contract to the Allis-Chalmers Co., Milwaukee, Wis., for a vertical triple expansion crank and fly-wheel pumping engine for the high duty station. The pump will have a capacity of 20,000,000 gallons in 24 hours against a head of 173 feet. It will be placed in operation in nine and a half months. William Clark, Toledo, is the consulting engineer for the installation.

Metal Lath.—Under the direction of V. D. Allen, inspector of buildings, Cleveland, O., tests will be made of the relative fire-resisting value of six types of partitions in which metal lath is used. The following are the kinds of construction: (1) Metal lath on wood studding; (2) wood lath on wood studding; (3) 2-inch metal lath partition; (4) stucco wall for residences in accordance with typical specifications which have been carefully prepared; (5) 4-inch hollow metal lath partition; (6) plasterboard partition according to the specifications of the United States Gypsum Co.

Cement Shows.—It has been decided to hold the Sixth Annual Chicago Cement Show in the Coliseum January 16-23, 1913, but to hold no shows in New York and Kansas City. It is possible that another exhibition will be held at some other point, although nothing has been definitely decided upon.

Dust Collector for Automobiles.—According to Consul Church Howe, Manchester, England, a Manchester engineer has patented an apparatus which, it is claimed, will prevent the clouds of dust raised in dry weather by automobiles and other vehicles. The device, which is simple and inexpensive, collects the dust as it rises. The dust is drawn into conduits which are funnel-shaped at the mouth and which run from the rear of the front wheels to the rear of the back wheels. These conduits are connected with a box into which the dust is driven by the pressure of air, or this end can also be accomplished by the aid of a centrifugal fan geared to the driving shaft of the automobile. The contents of the dust box can be discharged by pulling a lever at the front of the vehicle.

Water Works Company.—The American Water Works and Guarantee Company, of Pittsburgh, has increased its capital from \$10,000,000 to \$20,000,000 by issue of \$10,000,000 6 per cent. cumulative participating preferred stock. The American Water Works & Guarantee Company is a New Jersey corporation, organized in 1882. It controls and operates plants supplying water to more than 1,250,000 people in eighty-two rapidly growing cities and towns in the United States; controls one of the most successful interurban traction and lighting systems in the United States, located in and around Pittsburgh controls and operates one of the most valuable hydro-electric companies in the United States, located in southern Idaho; controls and operates directly or through its four subsidiaries in the Twin Falls country, Idaho, and in the Sacramento Valley, California, irrigation systems designed for the irrigation of \$650,000 acres of land; controls companies which operate a group of bituminous coal mines in Pennsylvania. The company will make application to list its preferred stock on the New York, Pittsburgh, London, Paris, Amsterdam and Brussels stock exchanges.

NEW CORPORATIONS

The Southern Utahite Powder Company, Birmingham, Ala.; capital, \$50,000; to manufacture explosives. Incorporators: R. H. Bowron, R. C. Jones and others.

The Red Clay Gravel Company, Montgomery, Ala.; capital, \$14,000; to operate gravel pits. Incorporators: L. C. Young, president, and others.

Consolidated Cities Light and Power Traction Company, Dover, Del.; capital, \$10,000,000.

Sheffield Electric Light, Heat and Power Company, Sheffield, Pa.; capital, \$5,000.

Butler County Light Co., Butler, Pa.; capital, \$25,000.

Crescent Engineering and Construction Company, Chicago, Ill.; capital, \$50,000. Incorporators: Geo. E. Swartz; Fred Plotke and William E. Elliott.

The Paving Contractors' Association, Chicago, Ill., for the advancement of trade interests. Incorporators: John Ogara, C. C. Lakin and Irving D. Potter.

The Asheville Power & Light Company, Asheville, N. C.; capital, \$2,000,000. Incorporators: H. H. Carr, H. P. Dalton and F. H. Briggs, of Raleigh. For the development of electric power in the western part of the State.

The Sullivan County Water Company, Sullivan, Ind.; capital, \$75,000; has been granted a 25-year franchise and will construct a waterworks system, drawing the water from driven wells ten miles from the city.

The International Concrete Piling Company, Jamestown, N. Y.; capital, \$100,000; to engage in general contracting and construction work, for which considerable mechanical equipment will be required. Incorporators: F. G. Curtis, D. A. Curtis and H. G. Rask.

Pure Water Apparatus Company, Woodbury, N. J.; capital, \$600,000.

Columbia, Light, Heat & Power Co., Manhattan, N. Y.; manufacture and supply gas and electricity; capital, \$25,000. Incorporators: Geo. Leary, 1053 Fifth avenue, New York City; Fred'k. H. Schomburg, 8811 13th street, Brooklyn; Adelbert W. Bailey, 7 W. 103d street, New York City.

Kittanning Water Power Company, Pittsburgh, Pa.; \$5,000.

New Jersey Gas & Electric Company, Wilmington, Del.; capital, \$1,000,000.

New England Cement Gun Company, Wilmington, Del.; capital, \$100,000.

Sweetwater Light & Power Company, Sweetwater, Nolan Co., Tex.; capital stock, \$50,000. Incorporators: L. L. Stephenson, W. J. Fulwiler, H. G. Carroll.

San Angelo Water, Light & Power Co., San Angelo, Tex., filed an amendment increasing its capital stock from \$225,000 to \$500,000.

The South Hempstead Water Corporation, Hempstead, Nassau Co., N. Y.; supply water. Incorporators: Archibald G. Patterson, Caroline M. Patterson and J. Edward Patterson, all of Hempstead, N. Y.

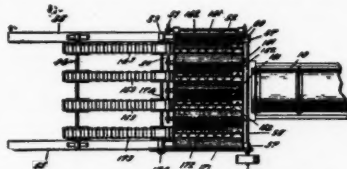
Tennessee Railway Light & Power Company, Portland, Me.; capital, \$70,000,000.

Pennsylvania Rock Asphalt Paving & Construction Co., Pittsburgh, Pa.; capital, \$100,000. Incorporators: Chas. S. Rea, Theodore Myler, J. G. Ryan, all of Pittsburgh.

PATENT CLAIMS

1,027,334. PAVING PLANT. Frederick A. Hetherington, Indianapolis, Ind. Serial No. 448,564.

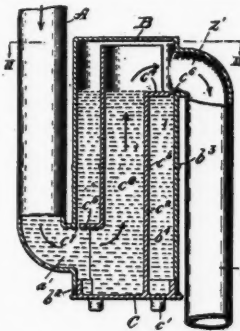
In a paving plant, the combination of a drier provided with means for maintaining the general character of the mixture delivered thereto, a plurality of bins,



a receiver supplied in common by said several bins and supplying the drier, positive continuous feeding means arranged in each of said bins for feeding material freely therefrom into said receiver, and means for feeding material into the several bins.

1,027,997. SEWER-GAS TRAP. Frank E. Cudell, Cleveland, O. Serial No. 672,057.

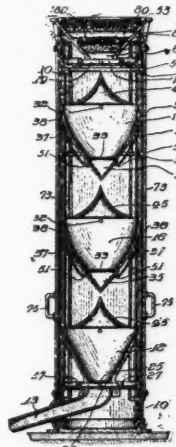
A sewer-gas trap comprising the combination of a pot provided with upper and lower openings, and an interiorly posi-



tioned duct communication with said openings and with said pot, said duct having flared portions adjacent said openings.

1,029,126. CONCRETE-MIXING MACHINE. David B. Hoover, Elizabethtown, Pa. Serial No. 581,361.

In a concrete mixer, the combination with interposing mixing hoppers, each having an inlet and an outlet, of a surrounding casing operative to support said hoppers, a gate suspended by links within said casing dependent from each of said hoppers automatically actuated to control said outlet, and comprising op-

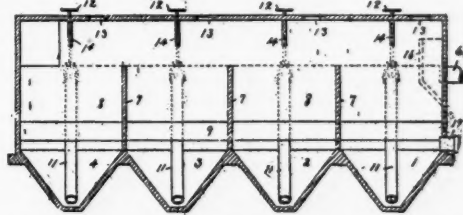


posed complementary jaws pivoted to said hoppers and co-operative with the walls thereof to govern its rocking movement, and yielding means tending to maintain said jaws in closed position to retain material in said hoppers, said material being effective to open said jaws in opposition to the closing means, by the accumulation of a predetermined weight of said material in said hopper.

1,027,948. SEWAGE-DISPOSAL PLANT. Albert H. Wehr, Mount Washington, Md. Serial No. 683,398.

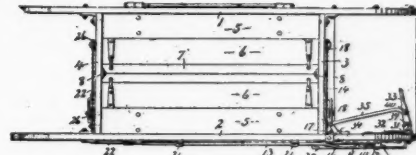
A plurality of intercommunicating tanks, the first one of which has an inlet and outlet, a central wall extending

the full length of all of said tanks and projecting from the top to near the bottom thereof and partly cut away in the last tank, and two walls extending the full length of all of said tanks and projecting from the top thereof and converging toward the central wall and terminating above the lower end of the latter.



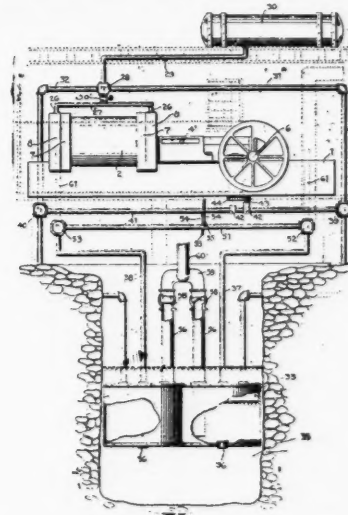
1,029,343. DUMP WAGON. Wilbur L. Collins, Newark, N. Y., assignor to Daniel W. Crowley, Newark, N. Y. Serial No. 612,503.

In a dump wagon, a dump box having opposite pairs of laterally swinging bottom doors, a lever fulcrumed on the box, flexible connections between the lever and front ends of the doors, separate



flexible connections between the lever and rear ends of the doors, a pawl on the lever, a toothed rack pivoted at one end to the box, and means for moving the toothed rack into and out of engagement with the pawl comprising a cam lever pivoted to the opposite end of the rack, a foot lever, and connections between the foot lever and cam lever.

1,029,143. PUMPING APPARATUS. Friend A. Allen, Granger, Mo., assignor of one-half to John W. Searight, Granger, Mo. Serial No. 631,229.



In an apparatus of the kind described, the combination with the extended branch pipes connected with the ends of the cylinder of an air engine, of a water receiving chamber with an inlet valve mounted on the end of each of said branch pipes and adapted to be suspended within a well, a valve in each of said branch pipes, an air escape pipe connected with the top of each of said cylinders, a valve in each of said air escape pipes, a water discharge pipe connected with the top of each of said cylinders, a rotary rod connected with said valve in the branch pipes, a second rotary rod connected with each valve in the air escape pipe, a link connection between said rods, a pair of tappets on the first-named rod, a toothed gear wheel having a depending pin adapted to successively engage said tappets and alternately operate the same, a second toothed wheel meshing with said toothed wheel, a toothed wheel on the opposite end of the shaft of said second toothed wheel, and worm meshing with said last-named toothed wheel, and mounted on the crank shaft of the engine.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	DATE	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Indiana	Fowler	July 1, 1 p.m.	Constr. stone roads.	S. Shipman, County Aud.
Minnesota	Minneapolis	July 1	Constrn. 1 mile concrete road.	A. P. Erickson, County Aud.
New Jersey	Elizabeth	July 1	Constrn. 7,000 yds. brick pav't and 4,800 yds. trap block pav't	W. P. Neasey, Street Comm.
Ohio	New Philadelphia	July 1, 1 p.m.	Pavg. with brick.	W. C. Shott, County Aud.
Indiana	Huntington	July 1	Constrn. 2.92 miles highway.	Harold Guthrie, County Aud.
Missouri	Hannibal	July 1	Constrn. 36,000 yds. brick and 18,000 yds. Hassam pav't.	C. F. Hayes, Mayor.
Ohio	Ulrichsville	July 1, 1 p.m.	Constrn. brick-paved road.	W. C. Shott, County Aud.
Illinois	Decatur	July 1	Constrn. 20,000 yds. brick pav't.	R. L. McCalman, City Engr.
New Jersey	Jersey City	July 1, 2 p.m.	Imp. 2 avenues.	E. B. See, Clk. Comrs.
Michigan	Bay City	July 1, 9 a.m.	Constrn. permanent pav'ts on 3 streets.	R. O. Woodruff, Chm. Bd. Pb. Wks.
Massachusetts	Boston	July 1, noon	Constrn. macadam roadway.	L. K. Rourke, Comr.
Indiana	Columbus	July 1, 10 a.m.	Constrn. gravel road.	P. J. Sater, County Aud.
Illinois	Odell	July 1, 2 p.m.	Constrn. 13,000 yds. brick pav't.	T. Trecker, Vil. Clk.
Virginia	Clarksville	July 1	Constrn. 1,500 yds. granolithic sidewalk.	R. H. Wesley, Mayor.
North Carolina	Murphy	July 1, 2 p.m.	Constrn. 22,000 yds. bit. street paving.	W. H. Woodbury, Pres. Comm.
Mississippi	Brookhaven	July 1, noon	Constrn. 29 miles road.	H. Cassidy, Chm. Comrs.
Indiana	Jasper	July 1, 2 p.m.	Constrn. gravel roads.	J. H. Seng, County Aud.
Indiana	Versailles	July 1	Constrn. macadam road.	J. F. Lochard, County Aud.
Indiana	Kentland	July 1, 2 p.m.	Constrn. macadam road.	E. R. Brigham, County Aud.
Indiana	Shoals	July 1, 1 p.m.	Constrn. macadamized roads.	J. T. Morris, County Aud.
New York	Long Island City	July 1, 11 a.m.	Pavg. with asphaltic concrete.	M. E. Connolly, Boro. Pres.
Ohio	Lakewood	July 1, noon	Constrn. brick pav't on 4 streets.	J. W. Christof, Dir. Pub. Serv.
New Jersey	Irvington	July 1, 8 p.m.	Constrn. 6,000 yds. Telford pav't with brick gutter.	M. Stockman, Town Clk.
Pennsylvania	Philadelphia	July 1, 1 p.m.	Repair. asphalt streets.	M. L. Cooke, Dir.
New Jersey	Garwood	July 2, 8 p.m.	Constrn. 6,000 ft. concrete sidewalk.	W. Darroch, Boro. Clk.
Indiana	Covington	July 2, 1.30 p.m.	Constrn. gravel roads.	W. B. Gray, County Aud.
North Dakota	Ellendale	July 2	Grad. bridge approach.	V. E. Haskins, County Aud.
Indiana	Crawfordsville	July 2, 10 a.m.	Imp. a number of highways.	B. D. Engle, County Aud.
Ohio	Mount Gilead	July 2, 11 a.m.	Constrn. roads.	Clifton Sipe, County Aud.
New York	Peekskill	July 2	Constrn. brick and asphalt block pav't, 10,000 yds.	Board of Trustees.
New York	Mount Vernon	July 2, 5 p.m.	Pavg. Claremont avenue.	E. W. Fiske, Mayor.
Indiana	Vincennes	July 2, 2 p.m.	Constrn. gravel roads.	J. T. Scott, County Aud.
Indiana	Crown Point	July 2, noon	Constrn. gravel roads.	C. A. Johnson, County Aud.
Mississippi	Amory	July 2, 2 p.m.	Constrn. 12 miles gravel road.	A. B. Cowden, Sec'y Comm.
Alabama	Calera	July 2, noon	Constrn. 4 miles chert road.	County Comm.
Virginia	Fredericksburg	July 2, noon	Constrn. gravel roads.	G. B. Wallace, County Attorney.
Virginia	Portsmouth	July 2, noon	Pavg. with vit. brick.	V. O. Cassell, Jr., City Engr.
Mississippi	Greenwood	July 2	Constrn. 25,000 yds. pav't.	J. S. Allen, City Engr.
California	Vernon	July 2	Constrn. 20,000 ft. road with asphalt.	J. A. Hurley, City Engr.
Ohio	Millersburg	July 2, 1 p.m.	Constrn. .34 mile bituminated concrete.	County Commissioner.
Ohio	Lisbon	July 3, 10 a.m.	Pavg. 1 mile brick road.	County Commissioner.
Ohio	Cleveland	July 3, noon	Pavg. with brick a number of streets.	W. J. Springborn, Dir. Pub. Serv.
Iowa	Council Bluffs	July 3, 5 p.m.	Constrn. concrete sidewalks.	C. J. Duff, City Clk.
New York	Brooklyn	July 3, 11 a.m.	Constrn. sidewalks, curbing, asphalt, etc.	A. E. Steers, Boro. Pres.
Alabama	Scottsboro	July 3, 11 a.m.	Resurface with chert on macadam.	W. S. Keller, St. Highway Engr.
Indiana	Evansville	July 3, 10 a.m.	Imp. and paving highway.	H. W. Hartig, Chm. Comrs.
New Jersey	Paterson	July 3, 2 p.m.	Constrn. asphalt concrete on Pompton turnpike.	W. H. Mason, Chm. Comm.
Indiana	Winchester	July 3	Constrn. a number of highways.	County Comm.
Oregon	Fossil	July 3, 1 p.m.	Constrn. roads and bridges.	H. F. C. Heidtmann, County Surv.
Indiana	Lafayette	July 3, 10 a.m.	Constrn. gravel roads.	D. W. Baxter, County Aud.
Ohio	Cincinnati	July 5, noon	Repair. roads.	Stanley Struble, Pres. Comm.
Indiana	Columbus	July 5, 10 a.m.	Constrn. gravel roads.	P. J. Sater, County Aud.
Ohio	Cleveland	July 5, noon	Constrn. brick pav't.	W. J. Springborn, Dir. Pub. Serv.
Washington	Pasco	July 6, 1.30 p.m.	Constrn. highway 2 miles long.	E. D. Sheffield, Clk. Bd. Co. Comr.
Pennsylvania	Washington	July 6, 1 p.m.	Constrn. brick pav't.	J. B. Wylie, Chm. Superv.
New York	Chappaqua	July 6, 11 a.m.	Imp. several highways.	G. W. Haight, Jr.
Indiana	South Bend	July 6, 10 a.m.	Constrn. macadam roads.	Clarence Sedwick, County Aud.
Alabama	Livingston	July 8, noon	Surfac. 3 1/2 miles road with chert.	County Comm.
Pennsylvania	Steelton	July 8, 7.30 p.m.	Imp. and paving Pine street.	C. P. Feidt, Boro. Sec'y.
Indiana	Fowler	July 8, 11 a.m.	Constrn. stone roads; cost, \$5,100.	Samuel Shipman, County Aud.
Ohio	Wauseon	July 8, noon	Pavg. with vitrified brick.	L. H. Deys, Vil. Clk.
New York	New York	July 8, 2 p.m.	Constrn. approach to Palisades Interstate Park.	C. W. Leavitt, Jr., Engr.
Kansas	McPherson	July 8	Constrn. brick, asphalt or concrete pav't.	H. A. Rowland, Engr.
Ohio	Youngstown	July 8, 1.30 p.m.	Constrn. 2 1/4 miles road.	F. Agnew, Sec'y Comm.
Pennsylvania	Harrisburg	July 9	Constrn. State highway.	E. M. Bigelow, Highway Comr.
California	Coalinga	July 9	Constrn. 9 miles road.	Board Supervisors.
Alabama	Red Bay	July 9, 5.30 p.m.	Constrn. 3 1/2 miles gravel road.	County Comm.
Ohio	Cambridge	July 9, noon	Constrn. 12,250 yds. vit. block paving.	K. M. Cosgrove, Chief Engr.
Alabama	Wetumpka	July 9, noon	Constrn. 4 miles gravel road.	County Comm.
Tennessee	Crossville	July 10, 3 p.m.	Constrn. 35 miles road.	O. W. Monroe, Chm. Comm.
Kansas	Pittsburg	July 10, 8 p.m.	Constrn. 21,000 yds. brick and 3,100 cement pav't.	L. E. Curfman, City Engr.
Wisconsin	Janesville	July 11, 2 p.m.	Pavg. alley with brick.	J. A. Fathers, Chm. Bd. Pub. Wks.
Kansas	Leavenworth	July 11, 5 p.m.	Constrn. curbing and grading.	J. H. Kirmeyer, City Clk.
Ohio	Cincinnati	July 12, noon	Oil roads.	County Commissioners.
Wisconsin	Edgerton	July 13, 10 a.m.	Constrn. asphalt macadam pav't.	H. B. Knapp, City Clk.
Indiana	Goshen	July 15, 1.30 p.m.	Macad. highway.	J. W. Brown, County Aud.
Kentucky	Pikeville	July 15	Constrn. 15,000 yds. brick pav't.	A. S. Reese, Clk.
Illinois	Cairo	July 16, 7.45 p.m.	Furn. gravel for roads.	Commissioners, District 7.
Alabama	Elba	July 19, noon	Constrn. 35 miles sand clay road.	County Commissioners.
Indiana	Huntington	July 22, noon	Pavg. with vit. brick 8 streets and alleys.	L. A. Pollock, Street Comr.
SEWERAGE				
Ohio	Lakewood	July 1, noon	Constrn. sewer.	Dir. Public Service.
New York	Glen Cove	July 1, 3 p.m.	Constrn. 20 miles 6 to 15-in. vit. pipe sewers.	Sewer Commissioners.
Ohio	Toledo	July 1	Constrn. sewers.	F. G. Stockton, Sec'y.
Montana	Lewistown	July 1, 3 p.m.	Constrn. 10,500 ft. 12 to 20-in. pipe sewers.	W. M. McClean, City Engr.
New Jersey	Jersey City	July 1, 2 p.m.	Constrn. sewer.	E. B. See, Clk. Comrs.
New Jersey	Westfield	July 1, 8 p.m.	Constrn. 600 ft. sanitary sewer.	A. W. Vars, Town Surv.
New Jersey	Irvington	July 1, 8 p.m.	Constrn. 1,700 ft. 15 to 24-in. vit. pipe; also 700 ft. 8-in. pipe	M. Stockton, Town Clk.
Michigan	Bay City	July 1, 9 a.m.	Constrn. several 12-in. sewers.	R. O. Woodruff, Chm. Br. Pb. Wks.
New Jersey	Garwood	July 2, 8 p.m.	Constrn. 1,850 ft. 8-in. vit. pipe sewer.	W. Darroch, Boro. Pres.
New York	New York	July 2, 7.30 p.m.	Constrn. sewers.	Geo. McAneny, Boro. Pres.
Ohio	Youngstown	July 19, noon	Furn. paint for bridges.	I. M. Hogg, County Aud.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Arkansas.....	Russellville.....	July 2.....	Constrn. sewer system; cost, \$30,000.....	J. T. Bullock, Mayor; E. A. Kingsley, Engr., Little Rock.
Texas.....	Beaumont.....	July 2, 10 a.m.....	Constrn. conc. & vit. pipe sewers, 8-in. to 7½ ft. diameter..	E. A. Fletcher, Mayor.
New York.....	Mount Vernon.....	July 2, 5 p.m.....	Constrn. sewers, drains and receiving basins.....	E. W. Fiske, Mayor.
New York.....	Brooklyn.....	July 3, 11 a.m.....	Constrn. concrete sewers.....	A. E. Steers, Boro. Pres.
Minnesota.....	Albert Lea.....	July 3, 7.30 p.m.....	Constrn. 80,000 ft. 6 to 10-in. sewer, etc.....	T. J. Dudley, City Clk.
New York.....	Rochester.....	July 3, 11 a.m.....	Constrn. c. i. sewer mains, etc.....	F. X. Pifer, Sec'y Bd. Contract.
Iowa.....	Holstein.....	July 3.....	Constrn. sewer system.....	A. G. Merkley, City Recorder.
Canada.....	St. Catharines, Ont.....	July 3.....	Constrn. cement and tiled sewers.....	R. D. Brown, City Engr.
Pennsylvania.....	Reading.....	July 3, 3 p.m.....	Constrn. clay pipe storm sewers.....	E. B. Ulrich, City Engr.
New Jersey.....	Newark.....	July 3, 3.30 p.m.....	Constrn. sewers in 7 streets.....	M. R. Sherrard, Chief Engr.
Canada.....	Ft. William, Ont.....	July 5.....	Constrn. concrete sewer.....	John Wilton, City Engr.
Ohio.....	Cambridge.....	July 6.....	Constrn. 8,700 ft. clay pipe and 600 ft. c. i. pipe sewer; also ejector.....	K. M. Cosgrove, City Engr.
Montana.....	Chinook.....	July 6.....	Constrn. main sewer system.....	F. D. Oreson, Town Clk.
Indiana.....	Thorntown.....	July 8, 2 p.m.....	Constrn. 3 sanitary sewers.....	F. E. Clark, Pres. Trustees.
Connecticut.....	Hartford.....	July 8.....	Install. pumping equipment.....	Jos. Butts, Sec'y Bd. Contract.
Washington.....	Renton.....	July 9, 7.30 p.m.....	Constrn. lateral sewers; cost, \$5,000.....	A. W. Ticknor, City Clk.
Texas.....	Clarksville.....	July 10.....	Constrn. sewers; cost, \$25,000.....	City Clerk.
Kansas.....	McPherson.....	July 12.....	Constrn. 6¾ miles 8 to 15-in. sanitary sewers.....	A. K. Rowlan, City Engr.
Ohio.....	East Youngstown.....	July 15.....	Constrn. sewers in several streets.....	P. J. Carney, Clk.
North Carolina.....	Carthage.....	July 16.....	Constrn. sewage system and water works.....	W. B. Jennings, Sec'y.
Iowa.....	Burlington.....	July 20.....	Constrn. concrete arch sewer; cost, \$50,000.....	H. G. Vollmer, City Engr.
Kansas.....	Independence.....	July 30.....	Constrn. ½-mile 24-in. to 4-ft. monolithic or brk storm sewers.....	A. H. Kriehagen, City Clk.
California.....	Sausalito.....	Aug. 1.....	Constrn. sewer system; cost, \$50,000.....	H. W. Chadwell, Town Engr.
WATER SUPPLY				
Ohio.....	Lakewood.....	July 1, noon.....	Constrn. water mains.....	J. W. Chrisford, Dir. Pub. Serv.
Nebraska.....	McCook.....	July 1, 6 p.m.....	Constrn. 7,300 ft. 2 and 4-in. iron pipe.....	L. C. Stoll, City Clk.
Vermont.....	St. Albans.....	July 1, 8 p.m.....	Constrn. earthen dam and reservoir and laying abt. 3 miles 12 to 15-in. water pipe.....	D. F. McCarthy, City Engr.
Colorado.....	De Beque.....	July 1.....	Install. water works; cost, \$20,000.....	L. Stimberg, Mayor; C. D. Vail, Denver, Colo.
Ohio.....	Bexley.....	July 1 (about).....	Constrn water and sewer system.....	F. D. Chamberlin, Mayor.
Ohio.....	Lakewood.....	July 1.....	Lay. water mains.....	J. W. Chrisford, Dir. Pub. Serv.
Canada.....	N. Battleford, Sk.....	July 2.....	Constrn. pump well.....	H. W. Dixon, Sec'y.
Michigan.....	Grand Haven.....	July 2.....	Constrn. 10,800 ft. 6 to 10-in. water mains.....	City Clerk.
Minnesota.....	Mapleton.....	July 2.....	Furn. gasoline engine, pump, etc.....	J. F. Albrecht, Clk.
Illinois.....	Morton Grove.....	July 2, 8 p.m.....	Constrn. well, tank, engine, pumps, etc.....	M. J. Lochner, Vil. Clk.
Maryland.....	Westernport.....	July 2, noon.....	Constrn. water works.....	C. H. Bruce, City Clk.
Iowa.....	Storm Lake.....	July 2.....	Furn 5,000 ft. 4-in. pipe hydrants, gates, etc.....	H. H. Steffen, City Clk.
Mississippi.....	Biloxi.....	July 2, 8 p.m.....	Constrn. extensions.....	E. Barg, Chm. Comm.
Indiana.....	Columbus.....	July 2.....	Constrn. mechanical water filter.....	City Clerk.
Minnesota.....	Albert Lea.....	July 3, 7.30 p.m.....	Constrn. 4,177 ft. 4-in. pipe, valves, hydrants, etc.....	C. J. Dudley, City Clk.
Kansas.....	Independence.....	July 5, 2 p.m.....	Constrn. setting basin.....	A. B. Stivers, City Engr.
Louisiana.....	New Orleans.....	July 8, 3 p.m.....	Furn. sluice gates.....	F. S. Shields, Sec. Sew. & Wat. Bd.
Ohio.....	Sandusky.....	July 10.....	Constrn. 4 filters and 2 sedimentation basins, drilling well.....	R. L. J. Wagner, City Engr.
Kansas.....	Independence.....	July 18, 2 p.m.....	Constrn. 4,000,000-gal. pumping engine.....	G. H. Kriehagen, City Clk.
Ohio.....	Fortsouth.....	July 18.....	Constrn. pumping station, well, intake, reservoir, filtration plant and pumping machinery.....	J. M. Williams, Dir. Pub. Serv. Commissioners.
Texas.....	Dallas.....	July 24 (about).....	Constrn. water filtration plant.....	L. N. Case, Mgr.
Minnesota.....	Duluth.....	July 27, 4 p.m.....	Furn. spiral united steel pipe and specials.....	Canal Commission.
Spain.....	Madrid.....	July 31.....	Constrn. filtration and purification plant.....	F. S. Shields, Sec'y.
Louisiana.....	New Orleans.....	Aug. 1.....	Constrn. reinforced concrete siphon.....	
LIGHTING AND POWER				
Minnesota.....	Duluth.....	July 1, 10 a.m.....	Furn. 5,700 ft. No. 14 copper wire, insulated.....	F. E. Hough, City Elec.
Kansas.....	Topeka.....	July 1, 9.30 a.m.....	Furn. special illumination.....	C. B. Burge, City Clk.
Illinois.....	Champaign.....	July 1.....	Constrn street lighting system, including 64 standards.....	N. M. Woodward, City Clk.; J. R. Crevath, Engr., Chicago.
New York.....	Walden.....	July 1 (about).....	Furn. gas plant for lighting and heating.....	Ezra Young, Vil. Clk.
Pennsylvania.....	Philadelphia.....	July 1.....	Lighting with mantle lamps, burning naphtha or other illuminating oil. Furn. lamp posts.....	M. L. Cooke, Dir. Pub. Wks.
New York.....	New York.....	July 2, 3 p.m.....	Furn. electric and gas lighting fixtures in hospital.....	J. W. Brannan, Pres. Trus.
Dist. Columbia.....	Washington.....	July 8, 10.30 a.m.....	Furn. elec. equipment for hydro-electric station at Gutan.....	Major F. C. Boggs.
Indiana.....	Kendallville.....	July 10.....	Furn. equipment for elec. light plant.....	City Clk.; F. H. Froehlich, Nasby Bldg., Toledo, O., Consult. Engr.
FIRE EQUIPMENT				
New York.....	New York.....	July 1, 10.30 a.m.....	Furn. 2 second size steam fire engines propelled by tractors; also solid rubber tires.....	Joseph Johnson, Comr.
Ohio.....	Cleveland.....	July 2, 9.30 a.m.....	Furn. fire hose reels and nozzles for public buildings.....	J. J. Boyle, Sec'y Bldg. Commission.
New York.....	New Rochelle.....	July 2, 8 p.m.....	Constrn. fire escapes.....	Board of Education.
Pennsylvania.....	Lebanon.....	July 5, 11 a.m.....	Constrn. engine house.....	D. M. Sharp, City Clk.
Ohio.....	Youngstown.....	July 9, noon.....	Furn. 4 hose & pump auto. fire engines, 3 comb. hose & chem. auto. engines, 4 tractors for steam fire engine, tractor for aerial truck, tractor for service truck, tractor for heavy hose & chem. wagon.....	Director Public Safety.
Pennsylvania.....	Sharon.....	Aug. 6, noon.....	Furn. automobile fire engine.....	O. J. Denny, Boro. Sec'y.
BRIDGES				
Kansas.....	Leavenworth.....	July 1, noon.....	Constrn. and repairing a number of bridges.....	J. A. Hall, County Clk.
Mississippi.....	Gulfport.....	July 1.....	Constrn. 2 bridges.....	F. S. Hewes, Clk.
Indiana.....	Rockport.....	July 1, 2 p.m.....	Constrn. 21 bridges.....	J. T. Stevens, County Aud.
Pennsylvania.....	Butler.....	July 2, noon.....	Constrn. 4 concrete bridges and repairing 1.....	W. B. Scott, County Clk.
Florida.....	Fort Myers.....	July 2, noon.....	Constrn. reinforced concrete bridge.....	County Comr.
Ohio.....	Cleveland.....	July 3, 11 a.m.....	Constrn. concrete bridge.....	J. F. Goldenbogen, Clk.
New York.....	Phoenix.....	July 5, 2 p.m.....	Constrn. concrete bridge.....	Town Clerk.
Ohio.....	Columbus.....	July 5, noon.....	Constrn. concrete bridge; cost, \$43,000.....	F. M. Sayre, County Aud.
Minnesota.....	Bimidi.....	July 8.....	Constrn. concrete bridge.....	J. L. George, County Aud.
West Virginia.....	Elkins.....	July 11.....	Constrn. bridge.....	County Clerk.
Indiana.....	Muncie.....	July 17, 1.30 p.m.....	Constrn. 6 bridges.....	F. M. Williams, County Aud.
MISCELLANEOUS				
Indiana.....	Fort Wayne.....	July 1, 3 p.m.....	Constrn. railroad track elevation.....	F. T. Benoy, Chm. Bd. Pub. Wks.
Pennsylvania.....	Philadelphia.....	July 1.....	Remov. and incinerating garbage during 1913.....	Director Cooke.
New York.....	New York.....	July 1, 11 a.m.....	Furn. 125,000 gal. asphalt road oil.....	M. E. Connolly, Boro. Pres.
New York.....	Albany.....	July 2, noon.....	Constrn. lock No. 8 and other work.....	D. W. Peck, Supt. Pub. Wks.
New York.....	Brooklyn.....	July 3, 11 a.m.....	Bldg. comfort station.....	A. E. Steers, Boro. Pres.
Kentucky.....	Winchester.....	July 5, 7.30 p.m.....	Bldg. city hall.....	J. A. Hughes, Mayor.
Dist. Columbia.....	Washington.....	July 6, 11 a.m.....	Furn. 4 electric and 18 hand-operated traveling cranes.....	Navy Department.
California.....	South Pasadena.....	July 8.....	Furn. road roller and scarifier.....	City Clerk.
California.....	Los Angeles.....	July 8.....	Constrn. storm water drain.....	H. G. Lelande, County Clk.
Ohio.....	Dayton.....	July 8.....	Constrn. river improvements.....	Dir. Public Service.
New Jersey.....	Freehold.....	July 10, 11 a.m.....	Constrn. retaining wall.....	J. M. Corlies, Dir.
Dist. Columbia.....	Washington.....	July 13, 11 a.m.....	Constrn. ice-making and refrigerating plant.....	Navy Department.
Dist. Columbia.....	Washington.....	July 13, 11 a.m.....	Furn. tanks for oil and gasoline storage.....	Navy Department.
Texas.....	Dallas.....	July 15, 2 p.m.....	Constrn. city hall; cost, \$400,000.....	City Commissioners.
New York.....	Rochester.....	July 15, noon.....	Furn. 28,000 bulbs and plants.....	Park Commissioner.
Alabama.....	Anniston.....	July 16.....	Constrn. jail.....	County Comr.
Louisiana.....	New Orleans.....	Aug. 16, noon.....	Furn. one 40-ton & one 10-ton elec.-operated traveling crane.....	F. S. Shields, Sec'y.

STREET IMPROVEMENTS

Lodi, Cal.—Arrangements are made for paving of two additional streets in Lodi.

Los Angeles, Cal.—Improvement of Second st., from Main to Los Angeles, and of Los Angeles st., from First to Second, by paving with asphalt, has been recommended by Board of Public Works.

Marysville, Cal.—Marysville is planning the parking and paving of great many more blocks of city streets this season.

Oak Park, Cal.—Steps are taken for the paving of two of the main business streets of Oak Park, an annexed district in Sacramento.

Bridgeport, Conn.—Bid of Burns Co. was the lowest received for oiling of 350,000 sq. yds., at 6 9-10 mills per sq. yd.

Bridgeport, Conn.—Paving of Park ave., from Fairfield ave. to north line of Washington ave. with wood blocks, is recommended.

Waterbury, Conn.—City Engineer has submitted estimates for various street improvements.

New Castle, Del.—Bids are being received by acting committee of Trustees of Commons for street improvements.

Washington, D. C.—Council has favorably considered proposition to macadamize Carroll ave. at a cost of \$1,600; building gutters on Poplar ave. at cost of \$700 and macadamizing Tullip ave., from Willow ave. to Oak ave., at cost of \$900.

Sanford, Fla.—Mass meeting has been called by Commercial Club to take action in favor of issue of bonds amounting to \$200,000 for purpose of building brick roads through election districts 3, 4, 20 and 25, of which Sanford is the center.

St. Petersburg, Fla.—Citizens have voted in favor of \$65,000 bond issue for street paving and storm sewers.

Tampa, Fla.—Widening of Zack st. is being considered.

Cedartown, Ga.—E. V. Camp, of Jaundan Engineering Co., of Savannah, has been drawing up specifications for paving of Main st. of Cedartown. Bids are now being advertised for. Five types of paving will be considered: wood blocks, vitrified brick, asphalt, asphalt on concrete and bituminous macadam.

Columbus, Ga.—Oiling of streets leading out from Columbus to Wynnton is being considered.

Cordele, Ga.—City will vote on \$95,000 bond issue for paving, sewer and water works system improvements.

Thomasville, Ga.—More paved sidewalks is being considered.

East St. Louis, Ill.—Ordinance authorizing improvement of Missouri ave., from Belt to city limits, at cost of \$96,000, has been passed.

Quincy, Ill.—Miles of sidewalks have been ordered laid in Quincy by City Council.

Muncie, Ind.—Following improvements have been estimated: For construction of cement sidewalk on Blaine st., \$1,121.25; for construction of combined cement curb and gutter on each side of Seventh st., \$1,257.90; for construction of combined cement curb and gutter in Gharkey st., \$896.16; for construction of alley, between Main and Jackson sts., \$992; for construction of alley, between Willard st. and F. V. Swain's addition, \$724; for construction of cement sidewalk on west side of Walnut st., \$136.20.

Richmond, Ind.—Petition for improvement of National rd. east from entrance of Glen Miller Park to State line, distance lacking only 150 ft. of being three miles, will be presented to Board of County Commissioners. Bond issue of \$64,500 to cover cost of Liberty pike and Easthaven ave. improvements has been advertised by County Treasurer. Liberty pike improvement will cost county \$46,000 and Easthaven ave. project \$18,500.

Clinton, Ia.—Resolution has been adopted ordering construction of large number of permanent walks in Sixth and Seventh Wards, formerly town of Lyons.

Fort Dodge, Ia.—Council has ordered 10 blocks of brick pavement.

Barbourville, Ky.—Fiscal Court of Whitley County has formulated plans for road bond election and election will be held late in year.

Lake Charles, La.—All bids received on street paving have been rejected. Bidders were the Creosote Wood Block Paving Co. and Southern Asphalt & Construction Co., whose bids were, respectively, \$2.64 and \$2.58, wood block; \$2.29 and \$2.38, asphalt. Southern Asphalt & Construction Co. bid \$2.49 on bitulithic. Work will be readvertised shortly. Plans and specifications at office of T. H. Mandell, City Engineer.

Baltimore, Md.—Clay gravel roads for Southern Maryland has been authorized at cost of probably \$3,500 a mile.

Frederick, Md.—Plans have been made for improvements to South st., from Telegraph st. east to brickyard siding.

Boston, Mass.—Mayor will send to Council, with message counselling immediate action, recommendation of Chairman Peabody, of Park Department, for appropriation of \$8,500 for grading and fencing John Winthrop playground; and orders calling for \$14,000 as addition to maintenance fund of City Hospital, \$5,000 for establishment of orthopedic department and \$5,000 for X-ray clinic.

Malden, Mass.—Communication has been received from Street and Water Commission stating that plans had been prepared for widening of Eastern ave., from Main st. to Ferry st. Plans provide for 60-ft. street, cost of work to be \$15,000.

Cadillac, Mich.—Construction of lake shore drive through village extending to Bishop rd., from water works, will be considered.

Grand Rapids, Mich.—Brick has finally been decided upon as material to be used in paving South Front ave. At meeting of property owners brick was deemed most suitable and cheapest.

Kalamazoo, Mich.—By action of Bonding Commission, Kalamazoo City Savings Bank was awarded \$95,000 street improvement and \$75,000 city improvement bond issue.

Ludington, Mich.—Bonds for \$50,000 to carry on extensive street improvements here, will be voted on June 27. City also contemplates purchase of new road roller.

Deerwood, Minn.—Sum of \$5,000 will be spent on street improvements.

Duluth, Minn.—Plan to pave and park 59th ave. west is being discussed.

St. Paul, Minn.—Unanimous votes in both Assembly and Board of Aldermen have approved resolution by Board of Public Works authorizing city engineer to pave 4th and 5th sts. by day labor, and providing equipment for him to go ahead with work. According to order Fourth st., from Wabasha st. to Seven Corners, will be paved with creosote block, at cost not to exceed \$17,729.25. Fifth st., from Broadway to Jackson st., is to be paved with sandstone block, and from Jackson st. to St. Peter st., with the exception of block from Cedar to Wabasha, which is not to be paved, with creosote block, at cost not to exceed \$24,947.48.

Butte, Mont.—Plans for extensive improvement of county roads have been decided on.

Gloucester, N. J.—Council of Gloucester has decided to buy steam road roller and to resurface South Broadway, favorite route for automobilists.

Hoboken, N. J.—Common Council has voted to issue bonds to extent of \$25,000 for purpose of repaving certain municipal thoroughfares.

Hoboken, N. J.—Common Council has voted to ask for bids on repavement of Clinton st., between First and Third sts.; 10th, between Grand and Clinton, and Jackson, between First and Paterson ave. It is said streets will be repaved with methods and materials similar to those used on Second st. job. Proposals call for wood block, bitulithic and asphalt, with concrete base.

Linden, N. J.—Among improvements contemplated by Township Committee is laying of number of crosswalks throughout municipality. Engineer has been instructed to advertise for bids, and it is expected that work will be started in short time.

Millville, N. J.—Council will meet in special session to consider proposition of using crushed stone on principal street.

Trenton, N. J.—Straightening of Prospect st. is being considered.

Trenton, N. J.—Ordinances have been introduced for paving of Davies st., from Third to Lalor, and for construction of drain No. 104 in Federal st. Ordinance for extension of Lyndale ave. to Hamilton ave. has been passed.

Brooklyn, N. Y.—At meeting of Newtown Local Board, Long Island City, resolutions were passed initiating proceedings for highway improvements and sewers estimate aggregate cost of which is \$300,000. Highway improvements authorized were following, with estimated cost: Regulating, grading and curbing Green ave., Ridgewood, from Grandview ave., \$7,900; Hill and Charles sts., Clermont ave. to Rush st., town of Newtown, \$26,800; Edsall ave., Ridgewood, Anthan to Onderdonk, \$9,100; Ridge st., Long Island City, from Boulevard to Academy st.; Helen st., Maspeth, from Metropolitan ave. to Zender st.

Lockport, N. Y.—Ordinance for construction of cement sidewalk on south side of Willow st., from Pine to Locust st., has been adopted. City Clerk was directed to advertise for proposals.

Lowville, N. Y.—Surveyors from State Department of Highways surveyed Dayan

st. for extension of county highway from corporation line in Dayan st. to State st. It is proposed to have Dayan st. paved with bitulithic pavement from State st. to Cascade ave. full width of street. From Cascade ave. to corporation line it will be 28 ft. wide with curb.

Newburgh, N. Y.—Improvement of Washington st. is being discussed.

Newburgh, N. Y.—Mayor Corwin has signed resolution appropriating \$1,800 for paving part of Colden and Lafayette sts.

Rochester, N. Y.—Ordinances have been passed for improvement of Geimer st., estimated cost \$9,000; Jackson st., cost \$8,500, and Clarendon st., cost \$3,500.

Schenectady, N. Y.—Movement for improvement of Maxon rd., from Nott st. to and beyond city line, across Freeman's Bridge, making another State highway from Albany to Saratoga, has received endorsement of State Highway Commission, and will be pushed forward.

Syracuse, N. Y.—Plans for five new county highways have been completed at office of Division Engineer Frederick S. Strong, of the State Highway Department, and forwarded to County Superintendent of Highways Frank E. Bogardus for approval.

Syracuse, N. Y.—Alderman Haley had adopted ordinance declaring intention to order pavement laid in Maltbie st., from Belden ave. to Spencer st., and in Spencer st., from Maltbie st. to N. Clinton st. He also had adopted ordinance ordering paving of N. Clinton st., E. and W. Division sts. and Fulton st., from W. Division st. south to present pavement. Cost was fixed at \$25,000.

Utica, N. Y.—Extensive improvements to various roads in county will be made this summer.

Winston-Salem, N. C.—Plan is proposed for improvement of E. 7th and Depot sts.

Cincinnati, O.—Board has opened bids for filling in of park triangle at Reading rd. and Burnet ave. Kirchner Construction Co. was low at 19 cts. Bids were also opened for first grading to be done at Bloody Run Parkway. Lowest bid was that of Scott & Walker, at 28½ cts.

Cleveland, O.—Ordinances have been introduced authorizing expenditure of \$25,000 for paving of boulevard entrance to city farm, and \$4,600 for purchase of auto patrol wagon.

East Youngstown, O.—Paving of Robinson rd., from Wilson ave. to 12th st., is being discussed.

Lisbon, O.—Three miles of paved road will be built by County Commissioners beginning at west end of Canton bridge in Center Township and extending almost to county infirmary.

Massillon, O.—Paving of Willman st., from South Lincoln ave. to Pine st., is being discussed.

Niles, O.—Ordinances to grade, curb and pave Cedar st., from Robbins to Vienna ave.; Church st., from Main to Chestnut st.; Beaver st., from Robbins ave. to Pearl st.; Chestnut st., from Mill to Williams st., and Mechanic st., from Neal to Williams, have been passed.

Ottawa, O.—Stacey & Braun, of Toledo, were awarded issue of \$65,000 stone road improvement bonds by Putnam County Commissioners.

Struthers, O.—Bids will be received at the office of Clerk of village, until 12 o'clock noon of July 24, for purchase of bonds in sum of \$15,442.64 for construction of brick pavement on State st. Ira Eisenbraun, Clerk.

Chester, Pa.—Plans have been approved by State Highway Department for construction of five miles of road on Baltimore pike running west from Media, and bids will be asked at once. Section of Baltimore pike to be given modern surface will have center of Media as its starting point, and will extend to Wawa, junction station of Pennsylvania Railroad's Baltimore Central division.

East McKeesport, Pa.—Bond issue of \$29,000 is being considered for purpose of grading, curbing and otherwise improving streets.

Erie, Pa.—Councils have ordered improvement of various streets of city.

Harrisburg, Pa.—Ordinance has been passed authorizing paving and curbing of Granite st., from Second st. to Fifth st. Charles A. Miller, Clerk of Common Council.

Philadelphia, Pa.—Highway Committee has approved repaving Market, from the Schuylkill River bridge to 33d st., and 23d st., from Ramstead to Market st., and such portions as surround hospitals not already paved with improved pavement, to be paved with wood block. Repaving of portions of streets with asphalt has also been authorized.

Pittsburgh, Pa.—County Commissioners have selected about 13 miles of highway for improvement this summer. Estimated

cost of construction is \$272,500. Advertisements will be inserted in the papers within a few days for proposals from contractors. Bituminous macadam is to be used on two principal roads. Following are roads Commissioners have selected: Bakerstown and Culmersville, 5.95 miles, in West Deer and Richmond Townships, bituminous macadam; connects Milledale and Culmersville with the Butler plank road. Estimated cost, \$126,658. Spring Run, in Crescent and Moon Townships, macadam; connects Stoops Ferry and Shousetown rd. at Boggs School. Estimated cost, \$36,595. West Run, 4.06 miles, in Milfin Township, bituminous macadam; connects West Homestead and Lincoln pl. Estimated cost, \$96,570. Second and Center sts., Elizabeth Borough, 72-100 mile, bituminous macadam; connects the Lovedale and Lock No. 3 improved roads. Estimated cost, \$12,710.

South Bethlehem, Pa.—Ordinance has been passed authorizing and directing issue and sale of bonds to amount not exceeding \$42,000 for purpose of paving streets.

Williamsport, Pa.—Paving of Hepburn st. is being discussed.

Providence, R. I.—Widening of several streets of city is being considered. These streets are Empire, N. Main, Fountain, Franklin, Plainfield, Randall, Smith and Waterman sts. and Maryland ave.

Sioux Falls, S. Dak.—Auditor has been instructed to advertise for bids for paving of alley in block 10; for paving Ninth st. and for paving Phillips ave.

Nashville, Tenn.—Bill has been passed for paving of 4th ave., from Church st. to Cedar st., with wood block on concrete.

Knoxville, Tenn.—Bonds in sum of \$15,000 will be sold for opening of Jackson ave.

Park City, Tenn.—Oiling of all streets is being considered.

Big Spring, Tex.—City Council has ordered laying of more cement sidewalks.

Bowling Green, Va.—Election will be held July 23 for voting on proposed bond issue of \$125,000 for good roads.

Fredericksburg, Va.—Bids are being asked for construction of permanent good roads in Stafford County by State Highway Commissioner as result of recent election for bond issue in Stafford County, which resulted in favor of bond issue.

Wheeling, W. Va.—Bids will be advertised for street improvement bonds No. 4, and will be opened July 18 and the bonds sold. Bonds will amount to \$25,500.

Fond du Lac, Wis.—Lowest bid for paving of three streets was received from G. H. Stanchfield, at \$11,633.

Janesville, Wis.—Council is now considering advisability of purchasing sprinkling wagon especially constructed for oiling streets.

Milwaukee, Wis.—County Board of Supervisors will construct concrete road leading 4½ miles south from city limits on Kilbourn rd.

Superior, Wis.—City Commission has ordered that cement walks be laid and water mains extended in various parts of city.

Superior, Wis.—Resolution for paving Winter st. west from Oakes ave. to Standard Oil Co. property, distance of 4,000 ft., passed by City Commission at a recent meeting. Bids have been asked on pavement of 24 ft. wide of four different materials—concrete, brick, sandstone and asphaltic cement.

CONTRACTS AWARDED

Little Rock, Ark.—By Commissioners of Street Improvement District No. 195, Gazette Bldg., to grade and pave Denison st. with waterbound or treated macadam and to lay sidewalks in district, to Woodsmall & McCarthy, of Little Rock, for \$10,948.

Burbank, Cal.—To F. H. Gridley, Higgins, Bldg., Los Angeles, at about \$25,000, for improving one mile of Olive ave. Work consists of grading and oiling, 5-ft. cement sidewalks, curbs and corrugated iron culverts.

Fowler, Cal.—To M. Haynes, of Visalia, for street improvement. His bid was 1¼ cts. per sq. ft. for Seventh st. and 1½ cts. per sq. ft. for all other streets. Work will total \$23,000 or \$24,000.

Glendale, Cal.—To Peter L. Ferry for macadamizing 6th st., from Glendale ave. to Eagle Rock, city limits, at \$18,000. This street forms connecting link in county good roads system between this section and Pasadena.

Los Angeles, Cal.—To C. I. Goucher, at \$13,813.32, for improving Alessandro st., between Angelica and Reservoir sts. Work consists of grading, graveling and oiling, cement curbs and gutters, granite gutters and sidewalks.

Hampton, Conn.—For constructing 11,600 ft. of State highway in Chaplin and

Hampton, to Jones & Roccato, of Norwich, for about \$20,000.

Daytona Beach, Fla.—By Council, for grubbing and grading Grandview ave., to E. A. Branch.

Tallahassee, Fla.—By city, for paving to Southern Paving & Construction Co.; it bid for 22,000 sq. yds. paving on brick on edge sand fill \$1.96 per sq. yd., on brick flat \$1.76, and 12,000 ft. granite curb 72 cts., of 12,000 ft. concrete curb 42 cts.

Atlanta, Ga.—By Street Committee of Council, for paving Marietta st., to T. D. Meador, Jr., at \$2.14 per sq. yd., for wood block.

Cedartown, Ga.—For paving Main st., from City Hall to Right House, to West Construction Co., of Chattanooga, Tenn., for \$1.39 per sq. yd. for sheet asphalt on present macadam foundation, with granitoid gutters. Also all necessary storm sewers to same company.

Gainesville, Ga.—By Mayor and Council, for paving Main st., from City Hall to Southern depot, distance of one mile, to Atlantic Bitulithic Co., of Richmond Va., at \$2.19 per sq. yd.

Waynesboro, Ga.—By City Council, to A. H. McDaniel, Augusta, at \$30,000, for construction of about eight miles of cement sidewalks.

Pekin, Ill.—By Board of Local Improvements, to Jensen & Zoeller, 920 S. Fifth st., at \$31.918, for vitrified brick paving in Broadway.

Rochelle, Ill.—To A. E. Rutledge, of Rockford, for 32,000 sq. yds. brick pavement in Rochelle, for \$77,197.

Frankfort, Ind.—By Board of Clinton County Commissioners, for construction of gravel roads: Davis rd., to Frankfort Construction Co., Frankfort, \$5,065; Sloan rd., to C. C. Huffine, of Frankfort, \$1,424; Carter rd., to C. D. Maxwell, of Michigan town, \$1,245; Whiteman rd., to L. W. Seaman, of Frankfort, \$2,356; Stevenson rd., to W. D. Kelly, of Frankfort, \$3,768; Friend rd., to Irwin & Miller, of Frankfort, \$1,145; Creson rd., to Irwin & Miller, of Frankfort, \$2,340; Corbett rd., to Frankfort Construction Co., Frankfort, \$14,830; Shafer rd., to Frankfort Construction Co., Frankfort, \$12,535; McKinsey rd., to Adam Bros., of Lebanon, \$6,869; Peter rd., to C. C. Huffine, of Frankfort, \$4,088; Jacoby rd., to L. W. Seaman, of Frankfort, \$4,600.

Kentland, Ind.—By Board of Newton County Commissioners, to Alva Herrieman, at \$4,130, for construction of MacReading rd. in Inroquois Township, Newton County.

Marion, Ind.—Washington st. river bridge will be refloored with Kreodone blocks. These are blocks soaked in creosote under this pressure and are so saturated with material that they will last for years. Contract for work was awarded by County Commissioners to Attica Bridge Co., at \$4,289. Only other bidder for contract was Pasco Poelle, whose bid was \$4,895.

Noblesville, Ind.—To John G. Clack, of Noblesville, by Board of Hamilton County Commissioners, for constructing two gravel roads in Clay Township, at \$5,984 and \$3,984.

Rensselaer, Ind.—To T. Snip Thayers, at \$2,499, for constructing one mile of macadam road.

Scottsburg, Ind.—To C. C. James, of Lexington, at \$4,799, for construction of London gravel road, 1.67 miles of stone roads and culverts, bridges, etc.

Vincennes, Ind.—To John Orensday, of Wheatland, by Board of Knox County Commissioners, at \$8,100, for construction of gravel road in Steen Township.

Greenfield, Ia.—By Town Council, for about 10 blocks of concrete paving, to D. W. Wright & Co., of Bedford, at \$1.24 per sq. yd.

Iowa Falls, Ia.—For paving, to Dearborn Construction Co., of Waterloo, at \$1.17½ for paving and 29½ cts. for curbing.

Keokuk, Ia.—To F. L. Griffey & Co., for macadamizing 14th st., at 88 cts. per yd.

Vinton, Ia.—To Frank K. Hahn, of Cedar Rapids, for paving, \$1.07 per sq. yd. for concrete work, 21 cts. for excavating, and 37½ cts. for curbing and gutter.

Maysville, Ky.—To Contractor James Dawson, for cement work on Short, Sutton and Sixth sts. and Forest ave.

Leavenworth, Kan.—On bid of 34½ cts. per yd. for grading 670 yds. of dirt and 34½ cts. per ft. for 1,130 ft. of curbing on Prospect, between Fifth and Sixth aves. contract was let to W. F. Edgell.

Taunton, Mass.—By Committee on Finance, \$35,000 bond issue for permanent street improvements, to Blake Bros. & Co., of Boston, highest bidders, at \$102,530.

Baltimore, Md.—Board of Awards have awarded contracts for many thousand

dollars' worth of sheet asphalt, vitrified brick, Belgian block and bituminous concrete paving. Three contracts in succession will go to Padgett's firm—F. E. Schneider Paving Co.—Contracts 3, 8 and 9, for work for Commissioners for Opening Streets, his concern underbidding all other competitors on bituminous concrete, at \$1.35 per sq. yd. The Elder Paving & Contracting Co. were given contracts for Contracts 6 and 7 of the Opening Streets Commission, latter concern having bid \$1.55 for sheet asphalt on 4-in. base for each of contracts, to Padgett's \$1.60. For Contracts 22 and 23 of Paving Commission lowest bidder, Thomas Mullin, was turned down on account of his failure to include bonding company certificate, and contracts awarded to next lowest bidder, Martin J. Beach, who also secured Contract 21. These contracts are for vitrified brick paving, and bids of the Beach concern for three contracts, respectively, were \$8,690, \$7,436 and \$5,330.20. Sunningham Paving & Construction Co., of Philadelphia, was lowest bidder for Contract 24 of Paving Commission at \$2 per sq. yd. for 3,000 yds. of vitrified brick, while Elder Co. was lowest bidder for Contract 20, bidding 90 cts. per sq. yd. for sheet asphalt resurfacing. Contract 25 of Paving Commission called for 5,700 sq. yds., and will go to John E. Quinn, who was lowest bidder, at \$3.15 per sq. yd.

Use of both vitrified brick and Belgian block is called for in Contract 26, for which Martin J. Beach is lowest bidder, bidding \$1.95 per sq. yd. for vitrified brick and \$3.45 for Belgian block. John E. Quinn was lowest bidder for Contract 27, calling for 16,000 sq. yds. of Belgian block. His bid was \$3.25 per sq. yd.

Hamtramck, Mich.—By Council, for paving of Smith and Clay aves. and DuBois st., to R. D. Baker, at \$14,000, and for paving Florian ave., at \$5,700.

Saginaw, Mich.—By Board of Public Works, for sheet asphalt pavement on following streets: Howard st., Holland ave. to Atwater st.; Carlisle st., Warren ave. to Second st.; Ninth st., James ave. to Walnut st.; Brown st., Holland ave. to Remington; Fourth ave., Walnut st. to Perkins st.; Perry st., Michigan ave. to Queen st., to S. S. Saxton, lowest bidder for best quality Trinidad asphalt. Following are bids received: Howard st., Holland ave. to Atwater st., sheet asphalt, W. N. Sager—Berea curb and brick gutters, \$9,984.12; cement curb and brick gutters, \$8,991.74; combined cement curb and 18-in. gutters, \$8,557.30. Cleveland Trinidad Paving Co.—Berea curb and brick gutters, \$10,540; cement curb and brick gutters, \$9,503.72; combined cement curb and 18-in. gutters, \$9,139.40. S. S. Saxton—Berea curb and brick gutters, \$9,636; cement curb and brick gutters, \$8,675.50; combined cement curb and 18-in. gutters, \$8,332.90. Carpenter & Anderson—Berea curb and brick gutters, \$9,903.18; cement curb and brick gutters, \$9,283.48; combined cement curb and 18-in. gutters, \$8,944.10. Carlisle st., Warren ave. to Second st., sheet asphalt, W. N. Sager—Resetting curb and brick gutters, \$2,355.05; resetting curb and no gutters, \$2,355.05. Cleveland Trinidad Paving Co.—Medina reset curb and brick gutters, \$2,455.25; Medina reset curb and no gutters, \$2,261; Medina reset curb and no gutters, \$2,212.55. Carpenter & Anderson—Medina reset curb and brick gutters, \$2,350.50; Medina reset curb and no gutters, \$2,353.35. Ninth st., James ave. to Walnut st., sheet asphalt, W. N. Sager—Berea curb and brick gutters, \$12,168.33; cement curb and brick gutters, \$10,787.65; combined cement curb and 18-in. gutters, \$10,392.81. Cleveland Trinidad Paving Co.—Berea curb and brick gutters, \$12,810.85; cement curb and brick gutters, \$11,353.22; combined cement curb and 18-in. gutters, \$11,020.40. S. S. Saxton—Berea curb and brick gutters, \$11,794.35; cement curb and brick gutters, \$10,451.25; combined cement curb and 18-in. gutters, \$10,122.05. Carpenter & Anderson—Berea curb and brick gutters, \$11,954.82; cement curb and brick gutters, \$11,133.12; combined cement curb and 18-in. gutters, \$10,813.79. Brown st., Holland ave. to Remington, sheet asphalt, W. N. Sager—Berea curb and brick gutters, \$3,500.96; cement curb and brick gutters, \$3,886.58; combined cement curb and 18-in. gutters, \$2,965.54. Cleveland Trinidad Paving Co.—Berea curb and brick gutters, \$3,717.60; cement curb and brick gutters, \$3,276.32; combined cement curb and 18-in. gutters, \$3,164. S. S. Saxton—Berea curb and brick gutters, \$3,408.40; cement curb and brick gutters, \$2,933.70; combined cement curb and 18-in. gutters, \$2,910.10. Carpenter & Anderson—Berea curb and brick gutters, \$3,493.24; cement curb and brick gutters, \$3,213.54; com-

bined cement curb and 18-in. gutters, \$3,110.86. Fourth ave. Walnut st. to Perkins st., sheet asphalt, W. N. Sager—Berea curb and brick gutters, \$5,149.83; cement curb and brick gutters, \$4,562.68; combined cement curb and 18-in. gutters, \$4,367.38. Cleveland Trinidad Paving Co.—Berea curb and brick gutters, \$5,459.50; cement curb and brick gutters, \$4,854.70; combined cement curb and 18-in. gutters, \$4,623.50. S. S. Saxton—Berea curb and brick gutters, \$5,011.10; cement curb and brick gutters, \$4,406.35; combined cement curb and 18-in. gutters, \$4,226.65. Carpenter & Anderson—Berea curb and brick gutters, \$5,121.77; cement curb and brick gutters, \$4,714.52; combined cement curb and 18-in. gutters, \$4,534.77. Perry st., Michigan ave. to Queen st., sheet asphalt, W. N. Sager—Berea curb and brick gutters, \$7,540.72; cement curb and brick gutters, \$6,586.72; combined cement curb and 18-in. gutters, \$6,350.32. Cleveland Trinidad Paving Co.—Berea curb and brick gutters, \$7,968.60; cement curb and brick gutters, \$6,981.20; combined cement curb and 18-in. gutters, \$6,743.50. S. S. Saxton—Berea curb and brick gutters, \$7,351.10; cement curb and brick gutters, \$6,430; combined cement curb and 18-in. gutters, \$6,189. Carpenter & Anderson—Berea curb and brick gutters, \$7,520.78; cement curb and brick gutters, \$6,906.28; combined cement curb and 18-in. gutters, \$6,679.18.

Amsterdam, N. Y.—By Common Council, for grading and resurfacing Guy Park ave. with crushed stone and tarvia, to Thomas Leonard & Co., at \$6,677.50.

Dunkirk, N. Y.—By Common Council, to McCormick & Sons, of Erie, Pa., for paving Roberts rd. with asphalt, contracts for paving East Front and Courtney sts. with concrete, to Dunkirk Construction Co., while paving of upper Deer st. with concrete will be done by city.

Fulton, N. Y.—By Board of Public Works, to W. J. Hartnett, of Fulton, for paving W. Broadway, from west line of West First st. to the D. L. & W. R. R., for \$27,955.

Lockport, N. Y.—For paving of Locust st., to Henry P. Burgard Co., of Buffalo, at \$51,525.56. Proposal calls for asphalt and brick pavement, from Walnut st. to Lincoln ave., and is to be laid with 5-in. concrete foundation.

Rochester, N. Y.—For Woodbine st. asphalt pavement, to Whitmore, Rauber & Vicinus, for \$8,979.50.

Schenectady, N. Y.—By Board of Contract and Supply, for 5,000 sq. yds., more or less, of asphalt pavement repair work, to Schenectady Contracting Co., on bid of \$1.16 a sq. yd. The Union Paving Co.'s bid was \$1.28.

Yonkers, N. Y.—To Kearns & Hart, 280 Nepperhan ave., for making repairs to asphalt pavement during ensuing year, at \$2.51 per sq. yd., for Class A asphalt, \$1.61 for Class B, and \$1.25 for Class C.

Cincinnati, O.—To Kirchner Construction Co., at \$10,104, for paving of Halpin ave., from Linwood to Griest aves.

Columbus, O.—By State Highway Department, at New Lexington, O., for grading and paving with waterbound macadam having bituminous surface treatment the New Lexington and Cornington rd., State Highway "A" Petition No. 403 in Pike Township, length 5,972.5 ft. or 1.13 miles, to Petrie & Lunsford, Logan, at \$11,400. For grading and paving with waterbound macadam Sunbury rd., State Highway "A" Petition No. 397, in Delaware and Brown Townships, length 8,863 ft. or 1.68 miles, to Kissner Martt, Delaware, at \$9,295. For grading and paving with bituminated concrete, Scotland-Station rd., State Highway "D" Petition No. 411 in Chester Township, length 8,960 ft. or 1.70 miles, to Minn & Henderson, Chagrin Falls, O., at \$14,480. James R. Marker, State Highway Commissioner.

Hamilton, O.—By Board of Control, for cement sidewalk construction contracts as follows: First district, George W. Kindred, \$2,015; second district, Miami Cement Co., \$1,987; third district, Spivey Bros., \$1,839.50; fourth district, Spivey Bros., \$1,864.50.

Lisbon, O.—For improvement of mile of road out of East Palestine, known as East Palestine and Lisbon rd., to William Johnson, on his bid of \$14,808.33. Other bidders were: Morris & Wright, and William McClain, of Lisbon; Freshwater Bros., of Chester, W. Va.; Charles Baldwin, of Coreopolis, Pa., and G. B. Patterson, Wellsville.

Zanesville, O.—To A. Emery & Son, Zanesville, for paving following streets: Ohio st., \$1.43 per sq. yd.; Sunset ave., \$1.55 per sq. yd.; North st., \$1.55 per sq. yd. and Hall ave., \$1.65 per sq. yd.

Oklahoma City, Okla.—By City Com-

mission, to Western Paving Co., at \$6,920, for paving Francis st., between 16th and 19th sts.

Poteau, Okla.—To Burke Bros., Ft. Smith, Ark., at \$40,998, for 35,000 sq. yds. water-bound macadam and 6,100 sq. yds. asphalt-bound macadam paving, 9,000 cu. yds. grading, 22,630 lin. ft. concrete curbing, and 28 concrete cross-drains.

Portland, Ore.—For proposed improvement of 20th st., between Carter and Spring, with gravel bitulithic pavement over concrete, by Street Committee of Council, to Pacific Bridge Co., at \$18,516. For improvement of Holgate st. district, to Oregon Independent Paving Co., for gravel bitulithic, for \$82,372. Property owners on Nebraska st., from Corbett to Virginia petitioned for gravel bitulithic. The Oregon Independent Paving Co. got job for \$31,121. East Ninth st., from Cora to Rhone went to same contractor for gravel bitulithic, for \$12,243. Contracts for improving nine streets in Kenton district with Westrumite pavement were awarded to Giebisch & Joplin, for \$91,907.

Altoona, Pa.—For building sidewalks and setting curb, to R. B. Vaughn.

Erie, Pa.—For paving East 26th st., to Mayer Bros., at \$1.52 per yd., from French to Ash sts., and to J. & M. Doyle, from State to French sts., at \$1.47 per yd. J. & M. Doyle were also successful in getting asphalt pavement on East Eighth st., from East ave. to Pennsylvania ave., on their bid of \$1.47 a yd. Contractors J. McCormick & Son bid \$1.65 on brick.

Plymouth, Pa.—To Davis & Parry, Downingtown, Pa., at \$9,993.60, for 4,210 sq. yds. of paving.

Williamsport, Pa.—By Highway Committee, for letting of contracts: Paving of Ross st., to Busch & Stewart, at their bid of \$2 per sq. yd., Watsonstown brick to be used; for paving of Seventh st., between Market and Pine st., to General Construction Co., at its bid of \$2 per sq. yd. To this company was also awarded contract for paving of intersection of Center and Edwin sts., at its bid of \$2.14 per sq. yd.

Ducktown, Tenn.—By Polk County Pike Commissioners, for grading and macadamizing road, from Ducktown to Cooper Hill, distance of seven miles, to W. T. Center & Russell, Denton & McClary Bros.

Lamar, Tex.—By Road Commissioners, for 328,533 sq. yds. paving, to O'Neill Engineering Co., Dallas, at \$237,502.07. Other bids as follows: Municipal Construction Co., \$278,757.53; Texas Building Co., \$321,274.25; Austin Bros., \$303,255.01; Western Paving Co., \$312,166.77.

Temple, Tex.—By City Council, for paving with brick, N. Main st., to Ockander Bros.

Tyler, Tex.—To Ockander Bros., of Texarkana, for paving with brick N. Broadway at \$2.25 per sq. yd., or total of about \$21,000.

Lynchburg, Va.—For paving Rivermont ave., from Jones st. to Belmont, with rubble stone, and from Belmont to city limits with asphaltic concrete, to Cleveland Trinidad Paving Co.

Richmond, Va.—By Committee on Streets, for paving Broad st. westwardly from 10th with asphalt block, to T. J. Smith & Co.

Tacoma, Wash.—To Washington Paving Co., for building hard surface for permanent highway No. 1, eight miles long, by County Commissioners. Bid was not the lowest in its class, but Commissioners decided it was best one offered. Paving will be of granitoid and will cost \$110,284. Following are bids as they were received on asphalt, brick and granitoid: Asphalt—Keasal Construction Co., \$107,703.80; P. E. McHugh, \$111,418.20; Independent Asphalt Paving Co., \$118,600.20; Hill Construction Co., \$125,222; Barber Asphalt Co., \$132,868.40. Brick—Washington Paving Co., \$139,164; Keasal Construction Co., \$139,623.80; A. H. Robinson, \$148,570.60; Sloan Bros., \$149,769.50. Granitoid—P. E. McHugh, \$100,018.20; Washington Paving Co., \$110,284; Independent Asphalt Paving Co., \$110,620.20; Joseph Warters, \$110,712.20; A. H. Robinson, \$114,370.60.

Walla Walla, Wash.—By Board of Commissioners of Walla Walla County, to L. Lanning, city, at \$11,930.31, for construction of permanent highway No. 2, known as Park st. extension.

Wheeling, W. Va.—To Cross & Myers, for paving McCulloch st., for \$5,102.

Racine, Wis.—For sprinkling of 10th and 13th sts., to Matt Gehl and to Birdsall & Griffith, respectively.

Fond du Lac, Wis.—To Louis Goding, for grading Military st. By State Highway Commission, for construction of Oshkosh rd., as follows: J. Rasmussen & Son, Oshkosh, for placing 1,300 cu. yds. of concrete, at \$1.82 per cu. yd. The Bruett

Cement Block Co. bid \$1.95 and Dudley & Prehn \$2.25 on the same work. The Helmer Milling Co. received contract for 1,500 barrels of Portland cement, at \$1.50 per barrel or \$1.09 net. Waukesha gravel will be used for concrete work.

Milwaukee, Wis.—For paving Layton and Rawson aves., entering Cudahy and South Milwaukee, by Highway Commissioner H. J. Kuelling, to South Milwaukee Fuel & Supply Co., at 35 cts. per sq. yd., county to furnish material. Stretches are three miles long.

Superior, Wis.—For cement walks in 9th Ward, to Russell Construction Co., at 59 cts. per lin. ft. John Anderson received sewer contract for alley between Birch and Catlin sts., at \$1,410.

SEWERAGE

Los Gatos, Cal.—Bond issue is being discussed for construction of improved and up-to-date sewer system.

Oak Park, Cal.—Plan is being considered for sewer system throughout annexed district.

Waterbury, Conn.—City Engineer has submitted estimates for various sewer improvements.

Washington, D. C.—Engineer Department has ordered that storm outlet sewer be constructed between intersection of Adams Mill rd. and Kenyon st. and Rock Creek, through grounds of Zoological Park, at estimated cost of \$1,750.

Washington, D. C.—Petition has been received for construction of sewer from Ethan Allen ave. down Cedar to Beech ave., distance of 2,400 ft., at estimated cost of \$1,800.

Live Oak, Fla.—City Council will sell \$35,000 bonds for sewer system.

St. Petersburg, Fla.—Citizens have voted in favor of \$65,000 bond issue for storm sewers and street paving.

Blackshear, Ga.—Election will be held on June 25 to bond town for \$55,000 for purpose of installing sewerage, electric light and water systems.

Cordele, Ga.—City will vote on \$95,000 bond issue for sewer and water works system improvements, paving, etc.

Clinton, Ia.—Construction of sewer on Park pl., from center line of Ash st. to center line of Parker st., has been authorized. C. J. Reusche, City Clerk.

Fort Dodge, Ia.—Council has ordered 10 blocks of sewers.

Lexington, Ky.—Joint resolutions declaring public sanitary sewer on High st., from Kentucky ave. to Ashland ave., and on Kentucky ave., from Main st. to southern main sewer, to be a necessity, have been passed.

Baltimore, Md.—City is considering establishment of plant at Back River for manufacturing of fertilizer from matter thrown off by sewage disposal plant.

Bellevue, Mich.—Village Council has called special election for June 24, to vote on proposition to bond that town for \$30,000 for sewerage system and water works.

Howell, Mich.—For third time in five years proposition to bond Howell for \$48,000 for sewers was voted on, and this time it was carried, 592 to 98.

Lewiston, Mont.—Council has rejected all bids received for sewer work, and has ordered same readvertised.

Trenton, N. J.—Construction of sewage disposal plant is being considered.

Brooklyn, N. Y.—Plans and estimates for proposed new sewerage system for Brooklyn are already in hands of Borough President Steers, and are about to be submitted to Board of Estimate and Apportionment for its approval. They call for expenditure of \$2,500,000. Plans were prepared in office of Lewis H. Pounds, Commissioner of Public Works, and are awaiting his final approval.

Brooklyn, N. Y.—Large number of sewer petition have been granted.

Saranac Lake, N. Y.—Proposition to raise \$50,000 for sewer extension has been carried.

Rochester, N. Y.—City Engineer Edwin A. Fisher has announced that bids will be asked at once on laying of sewage disposal system pipes under river at R. W. & O. bridge and at Ave. B. This contract will call for excavating and back filling for both of pipes.

Schenectady, N. Y.—Estimated amounts of sewer work to be done and material furnished are as follows: 8,048 cu. yds. of earth excavation; 12,071 cu. yds. of rock excavation; 441 cu. yds. of 1-3-5 Portland cement concrete; 7,501 lin. ft. of 8-in. vitrified tile; 4,490 lin. ft. of 10-in. vitrified tile; 4,168 lin. ft. of 12-in. vitrified tile; 5,048 lin. ft. of 15-in. vitrified tile; 1,029 lin. ft. of 18-in. vitrified tile; 282 lin. ft. of 20-in. vitrified tile, double strength; 1,400 lin. ft. of 30-in. vitrified tile, double strength; 36 lin. ft. of 8-in. cast-iron pipe; 132 lin. ft. of 10-in. cast-iron pipe; 168

lin. ft. of 12-in. cast-iron pipe; 348 lin. ft. of 16-in. cast-iron pipe; 152 lin. ft. of 30-in. cast-iron pipe; 918 lin. ft. of manholes, vertical measurement; 40 catch basins complete; 68,000 board ft. of lumber sheathing; 68,000 board ft. of lumber foundations. City officials, making rough calculations, say completed job will cost between \$70,000 and \$80,000, as much of excavation will have to be made in solid rock.

Tuckahoe, N. Y.—Sewer system proposed is to be constructed at cost estimated at \$228,000 and will require 116, 1/2 ft. of vitrified pipe for its construction, which will run from 6- to 24-in. in size.

Minot, N. Dak.—Plans have been prepared by E. J. Thompson, City Engineer, for sewer construction and water mains to cost \$70,000.

Akron, O.—Plans for proposed sewage and garbage disposal plant by Hopcroft, Matlock Co., of Boston, have been approved by Board of Control.

Cleveland, O.—Resolution has been approved for sewage disposal plant as mapped out by Sanitary Engineer Pratt; estimated cost, \$2,000,000.

Girard, O.—Bids will be received at office of Clerk of village, until 12 o'clock noon, on July 22, for purchase of bonds in sum of \$24,500 for purpose of paying cost and expense apportioned to village to pay in improvement of State st., from Squaw Creek bridge on north, southerly to southerly limits of corporation by constructing storm water sewers, branches and catch basins, grading, setting curb and paving. James E. Stotler, Clerk.

East McKeesport, Pa.—Bond issue of \$29,000 is being considered for purpose of sewerage and otherwise improving streets.

Mechanicsburg, Pa.—Ordinance providing for sewerage of W. Allen st. has passed second reading.

Philadelphia, Pa.—Main sewers authorized included 14, varying in cost from \$3,000 to \$40,000. This includes continuation of Cobb's Creek extension in proposed park, from Baltimore ave. to Spruce st.; from Market to 69th st. and from 70th, in Kingsessing ave., to Upland, in connection with same development, these three sections to cost \$90,000. Gunner's Run, in Indiana st., from Fourth to Mutter, will cost \$40,000, and one in Shunk st., Fifth to Broad st., will cost \$40,000.

Reading, Pa.—City Engineer has presented plans to Board of Public Works for four sewers to be built, as follows: Kutztown rd., from Meister's lane south to the intercepting sewer; Maple st., from the 10-ft. alley north to the sewer on Culvert st.; Oley st., from Locust to 13th st., and at 2d and Pear sts. After plans were gone over at length engineer was directed to prepare specifications separately for each sewer.

Knoxville, Tenn.—Bonds in sum of \$125,000 will be sold for construction of sanitary sewer along Third Creek.

Nashville, Tenn.—Board of Public Works has appropriated \$9,000 for construction of sewer in Tennessee st. and Glenn ave.

Fort Worth, Tex.—Announcement has been made that bids will be invited for construction of three storm sewers that will, it is hoped, greatly relieve storm water trouble at the places to be named. One will be at Magnolia ave., another at Jarvis st., and other will be under the railway tracks to relieve conditions at Lipscomb st.

Salt Lake City, Utah.—Bids on five proposed sewer extensions have been opened by city. Seventeen sets were submitted, the prices ranging from \$1.16 to \$1.50 per lin. ft. Low bidders on five contracts are apparently as follows: T. J. Everill & Co., on No. 299; J. F. Johnson & Co., on No. 301; A. A. Clark Co., on No. 302; L. R. Webber, on No. 303; T. J. Everill Co., on No. 305. Streets included in extension are No. 299, Chester ave.; No. 301, Washington ave.; No. 302, Thompson court; No. 303, Menlo ave.; No. 305, Islington court. The bids per foot follow: Extension 299—A. A. Clark, \$1.45; L. R. Webber, \$1.27; McKay & Reed, \$1.39; T. J. Everill & Co., \$1.16; J. F. Johnson & Co., \$1.38. Extension 301—McKay & Reed, \$1.25; A. A. Clark, \$1.30; J. F. Johnson & Co., \$1.19. Extension 302—McKay & Reed, \$1.39; A. A. Clark, \$1.35. Extension 303—L. R. Webber, \$1.45; McKay & Reed, \$1.57; A. A. Clark Co., \$1.60. Extension 305—McKay & Reed, \$1.47; A. A. Clark Co., \$1.35; T. J. Everill Co., \$1.22; J. F. Johnson Co., \$1.28.

Alexandria, Va.—Appropriation has been made of \$1,400 for sewer from Washington and Gibbon sts. westward, and \$1,200 for sewer on Princess st. eastward.

Leesburg, Va.—Election will be held at early date for voting on \$30,000 bond issue for improving of sewer system and extension of water works.

Warwood, W. Va.—Special election will be held to vote upon \$15,000 bond issue for constructing new sewerage system, building sewers in North Warwood (Glenova), and to put streets and alleys in better shape throughout town.

Warwood, W. Va.—All preliminary arrangements have been completed for Mayor Dowler to call special election in 30 days. Election will be for people to vote for or against town being bonded for \$15,000 to carry out sewer and street work. New sewerage system will cost about \$11,000, according to estimate of Civil Engineer H. J. Watson, of Wheeling.

Milwaukee, Wis.—Erection of chlorination plant and speedy acquisition of land for building of septic tanks and intercepting sewers has been urged upon Common Council by Mayor Bading in preference to carrying out plan for proposed \$265,000 Menomonee flushing tunnel.

CONTRACTS AWARDED

Ansonia, Conn.—To A. W. Byrne & Co., of Hartford, for construction of Section H of sewer system, on first plant, for \$10,590. Other bidders: O'Neil Bros., Hartford, \$12,201; A. Spinacchi Construction Co., Waterbury, \$13,690; A. Lambo, Waterbury, \$11,794; Thomas Matieo, New Haven, \$13,609; Bernadins & Co., Hartford, \$11,540; W. B. Byrne, Boston, \$16,284.

New Haven, Conn.—To Dwyer & Manix, for extension of State st. overflow sewer to Meadow st. sewer outlet, for \$8,898.

Jacksonville, Fla.—For constructing sewerage system at State Camp Grounds from plans of Wm. W. Lyon, 305 Duval Bldg., to F. S. Perham, for \$11,922.

North Chicago, Ill.—By Board of Local Improvements, to Chas. T. Bartlett, Evanston, Ill., at \$14,059.94, for construction of sewers.

Creston, Ia.—By City, for Sycamore st. sewer, to W. L. Thomas, Corning, Ia. Bids were as follows: (a) 3,000 ft. 8-in. sewer; (b) 1,500 ft. 6-in. sewer; (c) 100 "Y" specials; (d) 46 ft. cast pipe; (e) 33 ft. manholes; (f) 6 manhole tops. Geo. Auracher, Creston, Ia., (a) 68 cts.; (b) 65 cts.; (c) 55 cts.; (d) \$3; (e) \$2.65; (f) \$6.75. Geo. M. King, Des Moines, Ia., (a) 48 cts.; (b) 42 cts.; (c) 25 cts.; (d) \$1; (e) \$4; (f) \$8.50. O. P. Herrick, Des Moines, Ia., (a) 45 cts.; (b) 35 cts.; (c) 60 cts.; (d) \$1.50; (e) \$4.50; (f) \$8. L. V. Hites, Des Moines, Ia., (a) 58 cts.; (b) 51 cts.; (c) 40 cts.; (d) \$1.20; (e) \$4; (f) \$6.50. Western Improvement Co., Racine, Wis., (a) 65 cts.; (b) 55 cts.; (c) 40 cts.; (d) \$1.30; (e) \$3; (f) \$7. W. L. Thomas, Corning, Ia., (a) 42 1/2 cts.; (b) 37 1/2 cts.; (c) 51 cts.; (d) \$1.05; (e) \$1.13; (f) \$5.75. D. W. Wright & Co., Bedford, Ia., (a) 60 cts.; (b) 54 cts.; (c) 60 cts.; (d) \$3; (e) \$2.85; (f) \$6. Theo. S. DeLay, City Engineer.

Iowa City, Ia.—For construction of sewers, to Wm. Hoffer, of Iowa City, as follows: 2,800 ft. 15-in. vitrified salt glazed pipe, 98 cts.; 1,000 ft. 12-in., 74 cts.; 16,000 ft. 8-in., 64 cts.; 35 manholes, each, \$30; 15 flush tanks, each, \$90; 150 ft. 3/4-in. lead pipe, 40 cts.; total, \$16,184. Totals of other bids: Hoar & Parkinson, Iowa City, \$19,492; J. L. Berry, Iowa City, \$20,570; M. A. Camery, Harlan, \$20,454; Independent Construction Co., Davenport, \$19,674; C. B. McNamara & Co., Dubuque, \$20,143; W. D. Yeager, Cedar Rapids, \$20,708; Cook Construction Co., Des Moines, \$20,443.

Baltimore, Md.—Lowest bid received on Sanitary Contract No. 92, house connections across footways in District No. 15, was that of Gallagher, Boyle & Muller, at \$30,697.50. Other bids as follows: James Ferry & Son, Baltimore, \$41,409; Ryan & Reilly, \$46,832; B. F. Sweeten & Son, \$47,386. Calvin W. Hendrix, Chief Engineer.

Morris, Minn.—To S. J. Girberick, of Sheldon, Ia., for sewer contract, at \$1,918.

Shakopee, Minn.—By City Council, for installing extension to water and sewer systems, to include approximately 3,060 ft. 6 and 8-in. cast-iron water pipe, hydrants, and 3,770 ft. 8 to 12-in. sewer, etc., from plans of the Oscar Clausen Engineering Co., St. Paul, to J. J. Connolly, of St. Paul, for \$8,246.

Kansas City, Mo.—By Board of Public Works, to W. C. Mullins, at \$17,561.50, for constructing sewers.

Passaic, N. J.—For construction of sanitary sewer in Prospect st. easterly from Erie st. to De Vogel Contracting Co. Thomas R. Watson, City Clerk.

Trenton, N. J.—For construction of sewer No. 419 in Emmett ave., to James Tott.

North Tonawanda, N. Y.—For sewers in various streets, to Frontier Construction Co., of Buffalo, for \$5,442.

Bismarck, N. Dak.—For constructing lateral sewer on 10th st., between Broadway and Ave. B., to Haggart Construction Co., of Fargo, at \$1.32 for 10-in. sewer, \$1.27 for 8-in. sewer and \$57.70 for manholes.

Hamilton, O.—To Frank J. Davis & Sons, for sanitary sewer contract, at their bid of \$1,424.75.

Wauseon, O.—By Village Council, to R. C. Skeels, city, at \$4,586.28, for construction of main and branch drains.

Erie, Pa.—To Joseph McCormick & Bro. sewer contract in East 24th st., from Parade to Wallace sts., over Clements Wolfran and Edward Driscoll, on bid of 18 cts. for 9-in. pipe and 50 cts. for 6-in. pipe; \$1 for Y and T branches, and \$40 for manholes.

Williamsport, Pa.—For construction of Funston ave. sewer, to Joseph McCadden, at his bid of \$999.90.

Pierre, S. Dak.—To Stainer & Englund, of Pierre, for sewer work, at \$17,468. Other bids were as follows: J. H. Roberts, Brookings, \$20,387; Wm. Harbell, Pierre, \$21,732; Frazer & Danforth, St. Paul, \$20,750; R. B. Airey, Pierre, \$19,386; Jeffries & Roush, Ft. Pierre, \$18,023; L. W. Schruth, Fargo, \$20,585; J. M. Lewis, Sioux City, \$21,766; R. H. Townsend, Ft. Pierre, \$20,250; R. C. Noble, Centerville, \$28,758; A. L. Jones, Sioux Falls, \$20,092; L. M. Meeker, Madison, \$20,158.

Dallas, Tex.—For construction of storm sewer on Exposition and Parry aves., to Dallas Lime & Gravel Co., of Dallas, at \$6,790 and \$2,457, respectively.

New Westminster, B. C.—For storm sewers, as follows: To T. R. Nickson & Co., in Districts 2 and 4, and in District 3 to Powers Construction Co.; total cost, about \$60,000.

Montreal, Que.—For construction of Elgin basin outlet, to J. Toussaint & Co., at \$72,945.

Melfort, Sask.—For sewage disposal works, to J. A. Broby & Co., of Fernie, B. C., for \$6,600.

WATER SUPPLY

Alabama City, Ala.—City will vote on July 10 on bond issue for laying of water mains.

Gadsden, Ala.—About 500 water meters will be installed, for which bids will be received until July 1.

Fort Smith, Ark.—Water works and electric light bonds amounting to \$44,000 have been sold by Improvement Commissioners of Clarksville, to W. R. Compton & Co., of St. Louis.

Centerville, Cal.—Water supply for Washington Township will be considered.

Monrovia, Cal.—City Trustees have decided to try to develop larger water supply. At opening of Sawpit Canyon city owns 20 acres. It has been decided to employ expert to examine ground and if his opinion is favorable, wells will be sunk.

Pasadena, Cal.—At adjourned meeting of City Council ordinance was read calling special election for June 27 to submit proposition to voters of incurring indebtedness for construction and acquisition of municipal water system and providing for issuance of \$1,250,000 in bonds therefor.

Redlands, Cal.—Bonds has been issued for municipal water works.

Waterbury, Conn.—City Engineer has submitted estimates for various water improvements.

Washington, D. C.—Engineer Department of District has issued orders for laying of 505 ft. 8-in. water main in Macomb st., between 35th and 36th sts.; 185 ft. of 8-in. main in 35th st., south of Macomb st.; 130 ft. of 8-in. main on north side of U st. and Florida ave., east from 18th st., and 300 ft. of 8-in. main in the east side of 18th st., between U and California sts.

St. Petersburg, Fla.—Citizens have voted issuance of \$25,000 worth of bonds for water works.

Blackshear, Ga.—Election will be held on June 25 to bond town for \$55,000 for purpose of installing water, electric light and sewerage systems.

Cordale, Ga.—City will vote on \$95,000 bond issue for water works and sewer improvements, paving, etc.

Barrington, Ill.—Taxpayers have voted \$13,000 bond issue for filtration plant.

Mishawaka, Ind.—It is said that city will shortly vote on new water works system.

West Terre Haute, Ind.—Plans are being prepared for installation of water system to cost about \$35,000.

Dunlop, Ia.—Bonds in sum of \$8,000 have been voted for extension of water mains.

Griswold, Ia.—Vote will be taken July 8 for extension of water mains.

Hamburg, Ia.—Construction of stand-pipe for water system is being considered.

Sionx City, Ia.—Construction of reservoir at Morningside has been ordered by Council.

Sloan, Ia.—New water works system is being considered.

Henderson, Ky.—Election will be held Nov. 5 for voting on \$80,000 bond issue for completion of filter plant.

Mansfield, La.—Engineer H. W. Wright, of Winfield, has prepared plans for water works; estimated cost, \$56,000.

Westernport, Md.—Installation of municipal water works, including reservoir, dam, water mains, has been considered.

Bellevue, Mich.—Village Council has called special election for June 24 to vote on proposition to bond that town for \$30,000 for water works and sewerage system.

Detroit, Mich.—Bids will be received at office of Board of Water Commissioners of city up to 4 p. m., July 9, for purchase of \$240,000 in bonds of Board of Water Commissioners. H. A. Gilmartin, Secretary.

Sunfield, Mich.—Election is probable for voting on \$6,000 bond issue for water works.

Lake City, Minn.—Plans are being considered for water works system.

Red Lake Falls, Minn.—Bonds in sum of \$25,900 have been sold for construction of water works.

Flemington, N. J.—Borough officials have given notice of special election for vote upon question of purchasing plant of water company.

Millville, N. J.—Citizens have voted in favor of acquiring water plants of city.

Catskill, N. Y.—It has been stated that next construction work will be in Schoharie County, where reservoir with daily capacity of 9,000,000 gals. will be built by damming Schoharie Creek at Prattsville. Reservoir will be 100 ft. high, and connected with that at Ashokan by tunnel under mountains from Prattsville to Browns Station. Cost will be \$11,847,000, and work will take at least eight years.

Minot, N. Dak.—Plans have been prepared by E. J. Thompson, City Engineer, for water mains and sewer construction to cost \$70,000.

Cleveland, O.—Resolution authorizing special election, September 3, on question of issuing \$2,000,000 bonds to construct water filtration plants has been offered in Council.

Dayton, O.—It is likely that question of issuing bonds for completion of water works system will be submitted to voters for their decision. It is estimated that between \$450,000 and \$500,000 will be needed for this purpose.

Sandusky, O.—Board has approved plans of water purification plant. By new system water taken from Sandusky Bay will be filtered by most modern methods. Plant will cost about \$100,000. Water purification plant for Portsmouth, to cost about \$200,000, has also been approved by Board.

Springfield, O.—Superintendent George Cotter, of Water Works Department, has arranged to lay 40 ft. of water pipe in Prospect ave., where roadway will be macadamized in next few weeks.

Gresham, Ore.—Bonds have been voted for extension of water works.

Condersport, Pa.—Construction of water works is being discussed.

Camden, S. C.—Question whether or not city would issue \$100,000 in bonds for installation of water and light plant has been voted upon and carried by 114 to 46 votes.

Knoxville, Tenn.—Contract has been signed with city to extend mains of Knoxville water plant from Melrose ave. through O'Connor estate west of Melrose ave.

Big Springs, Tex.—Proposition of voting bonds to buy present water system or lay new system will be taken up at once.

Dallas, Tex.—Engineer J. H. Fuertes has completed plans for proposed filtration plant.

Logan, Utah.—Bonds in sum of \$20,000 have been voted for improvements to water works system.

Leesburg, Va.—Election will be held at early date for voting on \$30,000 bond issue for extension of water works and improving of sewer system.

Bellingham, Wash.—Installation of meters is being considered; estimated cost, \$47,400.

Ridgefield, Wash.—Installation of municipal water works is being considered.

East Milwaukee, Wis.—Village is preparing to lay 6-in. and 8-in. water mains in various streets. T. B. Olsen is Village Clerk.

Eau Claire, Wis.—Plans are being prepared for improvements at municipal pumping station.

La Crosse, Wis.—Bonds have been passed for additional \$150,000 for erection of reservoir on Grandad Bluff for new water supply.

Superior, Wis.—City Commission has ordered that water mains and cement walks be laid in various parts of city.

Waukesha, Wis.—Common Council will replace old water mains with cast-iron pipes; cost, \$15,000.

CONTRACTS AWARDED

Modesto, Cal.—By City Council, for extension of water system for which \$82,500 bonds are reported to have been issued, to Cast Iron Pipe Foundry Co., for pipe, etc., at \$30,412; C. D. Vincent, Oakland, labor and hydrants, etc., \$11,121. Capacity of tanks will be increased from 70,000 to 200,000 gals. and distributing system will be enlarged and extended.

Orange, Cal.—By City, for constructing concrete pumping plant, to R. L. Hogue, of Los Angeles, for \$4,981.

Salmon City, Idaho.—For extension of city water works, to Vogler Plumbing & Heating Co., of Salmon, their bid being \$24,250, which was lower than all other bids.

Evanston, Ill.—To J. G. Falcon, at \$2,800, for replacing 3,500 ft. of intake pipe.

Louisville, Neb.—To Alamo Engine & Supply Co., 1112 Farnam st., Omaha, at \$15,000, for constructing a system of water works.

Hyannis, Neb.—By village, for construction of water works, to C. G. Empfield, of Anselmo, for \$8,592.

Brooklyn, N. Y.—By Department of Water Supply, Gas and Electricity, New York City, for works as follows: For furnishing, delivering and laying water mains and appurtenances in Nostrand ave., Borough of Brooklyn, to Donlon Contracting Co., 34 Court st., Brooklyn, for \$29,571, and for overhauling and repairing Worthington high duty 20,000,000-gal. pumping engine in the old Ridgewood North Side Pumping Station, Brooklyn, to the John W. Sullivan Co., foot of E. 9th st., New York City, for \$32,325.

Geneva, N. Y.—By City, for construction of cast iron intake pipe and crib, to Hiram W. Phillips, of Quincy, Mass., for \$16,650.

Lockport, N. Y.—Bids have been received and opened for laying of water pipe in Washington st. and contract awarded to Frank J. Le Valley, the lowest bidder.

New York, N. Y.—For work on water mains, etc., for furnishing and rearranging connections on existing water mains and transferring taps in Columbia, Green, Elizabeth and various other streets, Borough of Manhattan, to Walton Contracting Co., 147 E. 125th st., New York City, for \$15,989.

Toledo, O.—By City Board of Control, to Allis-Chalmers Co., of Milwaukee, for 32,000,000-gal. pump, which will be used at city water works pumping plant. Contract price is \$82,000, which is \$20,000 less than cost estimated by city.

Erie, Pa.—Contracts for \$400,000 improvements in pumping station at water works have been signed by Water Commissioners and Henry Shenk Co.

Tarentum, Pa.—By Borough Secretary, for furnishing and laying approximately 12 miles of water fire lines, etc., to J. I. Dick, of Tarentum, for \$60,133.

Cleburne, Tex.—By Council, to Columbian Iron Works, of Chattanooga, for hydrants and valves, and to American Cast Iron Pipe & Foundry Co., of Birmingham, Ala., for pipe.

New Braunfels, Tex.—For water works and electric lighting improvements from plans of W. K. Palmer Co., Engineers, 717 Dwight Bldg., Kansas City, Mo., to Midland Engineering & Construction Co., Ft. Scott, Kan., at \$58,000. Other bids as follows: N. S. Sherman Machinery & Construction Co., Oklahoma City, Okla., \$61,777; Squires Electric & Construction Co., Kansas City, Mo., \$60,818; Des Moines Bridge & Iron Co., Dallas, Tex., \$61,390; Mathews Construction Co., Kansas City, Mo., \$62,020; B-R Electric Telephone & Manufacturing Co., Kansas City, Mo., \$59,940; O'Neil Engineering Co., Dallas, Tex., \$59,500. Engineer's estimate, \$61,069.

Norfolk, Va.—Guild & Co., of Chattanooga, Tenn., are reported to have secured contract for water mains in the 9th and 10th wards at \$18,727 and \$30,184, respectively; bids opened May 29.

Spokane, Wash.—For water main extensions in Manito Heights addition, to A. Wold, bid being \$9,750.

Elkhorn, Wis.—To Morrissey Bros., city, at \$1,470, for construction of reinforced concrete reservoir, 30 ft. in diam., by 11 ft. deep.

LIGHTING AND POWER

Glendale, Ariz.—Council has voted to issue \$9,000 in electric light bonds.

Fort Smith, Ark.—Electric light and water works bonds amounting to \$44,000 have been sold by Improvement Commissioners of Clarksville, to W. R. Compton & Co., of St. Louis.

Colusa, Cal.—Electric lighting system will be extended to suburban districts.

Blackshear, Ga.—Election will be held on June 25 to bond town for \$55,000 for purpose of installing electric light, water and sewerage system.

Waycross, Ga.—Waycross is to have gas plant.

Davis City, Ia.—Vote will be taken July 1 on installation of electric lights.

Dighton, Mass.—At special town meeting in Dighton hearing was held on matter of franchise and restrictions for Fall River Electric Co. It was unanimously voted to allow franchise for use of streets for supplying of light and power.

Merrill, Mich.—At special election Consolidated Light & Power Co. was given 30-year franchise.

Caldwell, N. J.—Caldwell's Borough Council has renewed its contract for street lighting with Public Service Electric Co. for term of three years.

Plainfield, N. J.—Common Council has made contract with Public Service Electric Co. for electric lighting for five years.

Totowa, N. J.—Installation of street gas lights has been authorized according to terms of contract entered into with Public Service Corporation.

Eastwood, N. Y.—Syracuse Lighting Co. has secured franchise to extend its mains into Eastwood and supply that village with gas.

Johnstown, N. Y.—Resolution has been passed instructing City Engineer to make rough draft of business portion of city so that General Electric Co. may furnish estimate of cost of installing their arc lights.

Sharon, O.—Sharon will erect municipal light plant at cost of about \$85,000.

Anderson, S. C.—W. W. Hess, of Germantown, Pa., has been granted gas franchise. Franchise provides that construction of plant must begin within six months after acceptance and that within 12 months thereafter plant must be furnishing gas through at least 12 miles of mains and pipes.

Camden, S. C.—Question whether city would issue \$100,000 in bonds for installation of light and water plant has been voted upon and carried.

Corpus Christi, Tex.—City Council has passed franchise granting to Vincent Brunzer, Royall Givens, Joseph Hirsch, M. T. Gaffney, Jacob Smith and others right to lay gas mains and construct gas plant in this city, franchise to be operative for period of 27 years.

CONTRACTS AWARDED

Cadillac, Mich.—By Village, to Detroit Edison Co., for erecting 70 electric street lights.

Rochester, N. Y.—Only bid submitted at meeting of Board of Contract and Supply on contract for lighting the city for term of five years was submitted by Rochester Railway & Light Co. Total amount of bid was about \$1,450,000. Bids are similar to those submitted five years ago. For arc lights, single, supplied from underground wires, the bid was 18.63 cts. a night; for arc lights in pairs, supplied by underground wires, 17.25 cts. a night; for arc lights, single, supplied by overhead wires, 15.87½ cts. a night. Other prices follow: For 60 candlepower, incandescent lights by overhead wires, 4.94 cts. a night; 60 candle power supplied by underground wires, 6.2 cts. a night; 80 candle power, overhead, 5.48 cts.; 80 candle power, underground, 6.57 cts.; 100 candle power, overhead, 5.75 cts.; 100 candle power, underground, 6.85 cts.; 200 candle power, overhead, 6.57 cts.; 200 candle power, underground, 8.77 cts.; 5 lights in group on post, 80 candle power, incandescent, if posts are not furnished by company, 17.4 cts. a night; same if posts are furnished by company, 24.66 cts. a night; for luminous magnetite lights, 25 cts. a night.

FIRE EQUIPMENT

Alhambra, Cal.—Board of Trade recommends \$15,000 bond issue for fire engine and apparatus.

Oroville, Cal.—Oroville will add modern automobile chemical fire engine to its equipment.

Ventura, Cal.—Santa Paula is moving toward volunteer fire department, and is planning to expend \$1,500 for equipment.

Sterling, Col.—Purchase of auto apparatus for local department is being considered.

Hartford, Conn.—Purchase of six pieces of auto fire apparatus is contemplated.

Thompsonville, Conn.—Purchase of hook and ladder truck, motor propelled, has been authorized.

Council Bluffs, Ia.—Bids will be advertised by City Clerk for auto combination hose and chemical truck; estimated cost, \$3,500.

Topeka, Kan.—In his budget for next year Mayor Billard will recommend that city buy three powerful motor fire-fighting apparatuses—two trucks and an engine. G. O. Wilmarth, Chief of Fire Department, is mapping out specifications.

Baltimore, Md.—County Commissioners are considering replacing horse-drawn apparatus in certain sections with auto engines.

Lansing City, Mich.—Council has authorized Recorder to advertise for bids on new fire station to be built at Adams and McKinley, according to plans drawn up by Clark & Munger.

Detroit, Mich.—Fire Commissioner Walsh has recommended that village purchase additional motor engine and ladder truck. Approximate cost of equipment will be \$13,000.

Detroit, Mich.—Bids will be advertised for 50 fire alarm boxes.

Grand Rapids, Mich.—Two new automobile hose wagons, motor drive for No. 3 engine house, and automobile for Fire Marshal Lemon will shortly be added to Fire Department.

New Brunswick, N. J.—Mayor John J. Morrison objects to city paying \$1.25 a foot for hose, when hose costing 65 cts. a foot has been in service and has given satisfaction. Accordingly he returned to Common Council unsigned, resolution directing that hose be purchased from several firms at rates ranging from 65 cts. to \$1.25 per foot.

Trenton, N. J.—Commissioner La Barre has introduced three ordinances covering bond issue of \$62,000 for purpose of better protection against fire.

Amsterdam, N. Y.—All bids received by Common Council for fire truck have been rejected.

Canton, O.—Council has passed bonds in sum of \$70,000 for erecting and equipping buildings for fire department.

Cincinnati, O.—Four bids have been received by Safety Director Price for furnishing fire hose. Lowest bid was that of Boston Woven Hose & Rubber Co. at 70 cts. a ft. Manhattan Rubber Co. and United & Globe Rubber Mfg. companies each bid 85 cts., but made changes in specifications, while Quaker City Rubber Co. submitted bid on its own form at 94 cts.

Cleveland, O.—Fire Department is about to buy its first auto fire engine. It will be installed at new Ashbury ave. northeast fire station.

Mansfield, O.—Purchase of motor fire truck is recommended.

Marion, O.—Plans are being prepared for construction of fire station; estimated cost, \$19,000.

Niles, O.—Plans for new fire station and jail and remodeling of first floor of city building are being prepared by A. E. Hackett, local architect.

La Grande, Ore.—Purchase of motor fire truck is being urged by Mayor; cost, \$6,000.

Allentown, Pa.—Ordinance is being considered for purchase of chemical and cotton fire hose, construction and installation of conduit system; estimated cost, \$55,000.

Altoona, Pa.—Mayor S. H. Walker has approved resolution directing purchase of Knox auto fire truck for use of department.

Conschohocken, Pa.—Purchase of auto combination wagon is being considered.

Mechanicsburg, Pa.—Citizens' Fire Company has been granted 300 ft. of fire hose, and request of Washington Hose Company for 150 ft. of hose has been referred to Fire Committee.

Reading, Pa.—Purchase of new combination wagon is being considered by Reading Hose Company.

Sharon, Pa.—Council has requested Secretary Denny to advertise for bids for fire trucks.

West Chester, Pa.—Loan of \$25,000 may be voted on for purchase of auto engine and apparatus.

Houston, Tex.—Purchase of water tower is being considered.

Antigo, Wis.—Installation of fire alarm system is contemplated.

Superior, Wis.—Communication asking that Commission arrange for purchase of motor-propelled fire engine and two tractors, one to be used for aerial truck at headquarters and other for fire engine at East End, has been received by City Commission from Fire Chief Johnson.

CONTRACTS AWARDED

Tampa, Fla.—By Fire Committee of City Council, to Bryannow-Baldrick Co., of this city, agents for Premier Automobile Co., for auto combination chemical and hose wagon, to cost \$4,125, and to Marion Reed, agent for the Seagrave Manufacturing Co., for similar machine, to cost \$4,975.

Seattle, Wash.—For furnishing 1,200 ft. chemical hose, one inch in diameter, to Bowers Rubber Works, at 44 cts. per ft. Other bids as follows: Boston Woven Hose & Rubber Co., 58 cts. per ft.; American Rubber Manufacturing Co., 59½ cts. per ft.; Gutta Percha Rubber Co., 53¼ cts. per ft. Also for fire station No. 5, repair, to Jenner & Pohl, \$698, \$25 per M. for additional material. Other bids as follows: Chas. H. Schaar, \$860, \$20 per M. for additional material; Ole N. Jensen, \$940, \$19 per M. for additional material; David Johnson, \$815, \$20 per M. for additional material; Geo. C. Dietrich, \$1,073, \$20 per M. for additional material.

BRIDGES

Alhambra, Cal.—Board of Trade recommends \$15,000 bond issue for bridges.

De Land, Fla.—Steel bridge is to be erected across St. Johns River, starting at foot of Celery ave. in Orange County and crossing over into Volusia County. Bridge has been provided for by Orange County people and number of individuals in New Smyrna and Osteen, and will cost about \$6,500.

Muncie, Ind.—Plans and specifications for Fletcher Pittenger bridge in Delaware township have been approved. Plans for construction of Fulhart bridge in Harrison township have also been approved. County Auditor was ordered to publish notice in newspapers for bids on following bridges: Lesh, No. 2; Hurley, Dudleston, Fulhart and Pittenger.

Muncie, Ind.—Plans and specifications for lowering of Whitney bridge in Perry township have been approved by Board.

Ocean City, N. J.—Bids for building of Ocean City-Somers Point auto bridge will be advertised for shortly.

Cohoes, N. Y.—State Canal Board has approved plans and specifications for erection of bridge across Erie Canal at Vliet st., this city, cost of which has been estimated at \$7,000.

Cleveland, O.—Changes in plans for new Clark ave. high level bridge announced by City Engineer Hoffman will make structure spanning Cuyahoga Valley 1,000 feet longer than New York's Brooklyn Bridge. The new Clark ave. viaduct will be nearly a mile and a half long. Estimated cost of bridge is \$1,200,000.

Cleveland, O.—Construction of new bridge at foot of East Ninth st. is being considered; cost, \$40,000.

Cleveland, O.—Question of replacing Main ave. N. W. bridge with lift bridge to cost between \$200,000 and \$300,000 is being considered.

Monroe, Ore.—Six thousand dollars has been appropriated to expend in constructing new steel bridge across Willamette slough at Ingram Island.

Philadelphia, Pa.—Following bridges authorized by Survey Committee are: Intercounty bridge, City ave. over Indian Run, \$10,000. Reconstruction of structure on line of Glenwood ave., over Philadelphia, Germantown & Norristown Railroad, \$16,000. New structure, 65th st., over Philadelphia, Baltimore & Washington Railroad, \$20,000. New bridge, 72d st., over Philadelphia, Baltimore & Washington Railroad, \$20,000. Montgomery ave., over connecting railroad, \$45,000. Sixty-sixth ave., over North Penn Railroad, \$26,000. Chester ave., over Philadelphia & Baltimore Central Railroad, \$38,000. Westmoreland st., over North Penn Railroad, \$4,000. Lindley ave., under tracks of North Penn Railroad (to abolish grade crossings), \$35,000.

Pittsburgh, Pa.—Erection of bridge connecting Lawrenceville & Bloomfield districts with Herron Hill section at 39th st. has been recommended.

York, Pa.—York County Commissioners gave favorable attention to proposal of Mayor Lafean that modern concrete bridge be erected to replace present wooden structure over Codorous Creek.

CONTRACTS AWARDED

Greensburg, Ind.—By Decatur County Board of Commissioners, following bridge contracts: Two steel bridges, Central States Bridge Co., Indianapolis, \$1,448.50 and \$1,967, respectively; steel bridge, Jackson & Bush, Greensburg, \$2,590; steel bridge, Pan-American Bridge Co., New-castle, Ind., \$2,644; concrete bridge, Snyder & Klosterkemper, \$1,030; three concrete bridges, Erhart Hessler, Greensburg, \$1,843, \$654 and \$344; concrete bridge, Charles Reddington, Greensburg,

\$684; concrete bridge, L. M. Walters, Clarksburg, Ind., \$249.70; concrete bridge, Joseph Rodman, Greensburg, \$812; concrete bridge, Owen McQueen, Greensburg, \$793. Bruce Craig Co., Surveyors.

Wabash, Ind.—For construction of concrete bridge over Wabash River at Bel-den to Indianapolis Concrete Co., at \$12,997. Bridge is 366 ft. long.

Council Bluffs, Ia.—To Lana Construction Co., of this city, for three new bridges in southwestern Iowa. Two are located near Adel, one being steel span of 120 ft and other of about 80 ft. Other new bridge is to monster affair to be built near Perry.

Fort Dodge, Ia.—Contracts have been let for two concrete bridges, one in Cooper Township on north river rd. for \$550 and the other in Dayton Township, for \$625. County Supervisors awarded same to Ward & Weighton, of Audubon.

Jefferson, Ia.—By Board of Supervisors for constructing cement bridge 210 ft. long across Raccoon River, to Marsh Engineering Co., of Des Moines, for \$14,500.

Kansas City, Kan.—To American Bridge Co., Chicago, at \$70,168.18, for construction of steel and concrete viaduct, 1,600 ft. long, at Mill st.

Newton, Kan.—For construction of five bridges in Harvey County, to Neeley Bros. Contracting Co., of Larned, Kan.; two bridges, 60-ft. span, reinforced concrete; total cost, \$7,280.

Turners Falls, Mass.—For constructing concrete bridge at Prospect st., to T. J. Hynes & Sons, of Wales, for \$9,332.

Columbia, Miss.—By Board of Supervisors of Marion County, to Joliet Steel Co., of Joliet, Ill., at \$1,600, for building bridge over Harpers Creek.

Medford, Ore.—By County Commissioners at Jacksonville, Ore., for construction of reinforced concrete or steel bridge over Bear Creek, in Medford, to E. G. Perham, or Marshfield, for \$33,900.

Altoona, Pa.—By Board of Public Works, for approaches to 7th st. bridge, to Woodman Lumber Co., of Cresson, for \$29,537.

MISCELLANEOUS

Alhambra, Cal.—Board of Trade recommends bond issues as follows: Park and improvements, West Alhambra, \$21,000; park and improvements, East Alhambra, \$16,000; park and improvements, South Alhambra, \$10,000; park and improvements, North Alhambra, \$7,000; city hall site, buildings and furnishings, \$40,000; incinerator and site, \$10,000; library site and building, \$50,000.

Pasadena, Cal.—A roadster and two trucks or delivery wagons for municipal lighting works department are to be advertised for by City Clerk, on instructions given by City Council. Bids are to be asked for gasoline roadster of not less than 20 horsepower and capable of carrying loads from 800 to 1,500 lbs. Also for both gasoline and electric trucks or delivery wagons. Specifications are on file at City Clerk's office.

Sacramento, Cal.—Two bond elections will be held in the month of July. One election will be for purpose of voting bonds for \$887,000 for carrying out flood control plan of City Engineer George N. Randle, and other will be to raise \$218,000 to build and furnish new Hall of Justice.

St. Petersburg, Fla.—St. Petersburg has just voted to issue \$200,000 worth of internal improvement bonds.

Atlanta, Ga.—Bonds for extensive public improvements will be voted on.

Marion, Ind.—L. L. Johnson & Son was lowest bidder, at \$35,450, for construction of Marion's new market and civic building.

Mt. Clemens, Mich.—At meeting of Supervisors it was decided that \$20,000 jail will be erected on site of old structure, work to be commenced as soon as plans can be perfected and bids for work passed upon.

Amsterdam, N. Y.—Common Council has rejected all bids received for furnishing city with motor truck.

Cohoes, N. Y.—State Canal Board has approved plans for construction of harbor and dock walls on western bank of Hudson River at Mechanicville, at estimated cost of \$47,711. Plans for harbor and dock walls in Cayuga inlet in city of Ithaca at cost of \$43,781, have also been approved.

Newburgh, N. Y.—Mayor Corwin has signed resolution authorizing City Engineer to prepare plans and specifications for public pier at foot of Broadway.

Rochester, N. Y.—Bids on contract for making alterations at building 9 at Exposition Park to provide for branch of

the Rochester Public Library, and for quarters for Rochester Historical Society, have been returned unopened by Board, and Secretary Pifer has been directed to readvertise.

Syracuse, N. Y.—The ordinance authorizing bond issue of \$100,000 for permanent improvements to city parks has been adopted by Common Council.

Akron, O.—Plans for proposed garbage and sewage disposal plant by Hoperoff-Matlock Co., of Boston, have been approved by Board of Control.

Cleveland, O.—Ordinance authorizing expenditure of \$500,000 for construction of first portion of new city hospital group has been introduced.

Youngstown, O.—Plan of Charles F. Owsley for \$200,000 city building has been accepted.

Youngstown, O.—Bond issue for \$300,000 to continue operations in Milton Basin has been authorized by Council.

Chester, Pa.—Property Committee of City Council has adopted plans prepared for erection of recreation pier at new Market st. wharf. After plans are approved by Council bids will be advertised for.

Ebensburg, Pa.—County Commissioners are considering resolution authorizing bond issue of \$350,000 to secure funds with which to erect proposed new insane hospital for Cambria County.

Williamsport, Pa.—Ordinance has been passed calling for purchase of automobile patrol wagon.

Fall River, R. I.—Board of Police has called for bids for light automobile patrol wagon, with seating capacity of four persons, including driver.

Pawtucket, R. I.—Resolution has been introduced calling for appropriation of \$40,000, estimated cost of reconstructing police station on North Main st.

Racine, Wis.—Sealed proposals will be received by the County Treasurer of Racine County, Wis., until noon July 1, 1912, for purchase of \$50,000 of the \$165,000 New Courthouse Construction bonds. J. J. Patrick, County Treasurer.

CONTRACT AWARDED

Calro, Ill.—To Cary Bros., of Memphis, Tenn., for repairing of levee in Birds Point district, 99,398 cu. yds., at estimated cost of \$23,885. Reelfoot Lake district levee contract has been let to C. T. Bondurant, 220,000 cu. yds., at cost of \$49,940.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Wisconsin	Superior	June 28, 1 p.m.	Constrn. cement sidewalks	A. F. Chadwick, Chm. Bd. Pb. Wks.
New York	Cortlandt	July 1, noon	Imp. Quaker Bridge road	Town Clerk.
New York	White Plains	July 1, 8 p.m.	Constrn. sidewalks and macadam. streets	Village Clerk.
Pennsylvania	W. Brownsville	July 1, 7.30 p.m.	Imp. and draining Middle street	E. V. Kaufman, Sec'y.
New Jersey	Paterson	July 2, 4 p.m.	Constrn. 20,000 yds. macadam	Board Public Works.
New York	New York	July 2, 2 p.m.	Constrn. stairway street	Geo. McAneny, Boro. Pres.
New York	Newcastle	July 6, 11 a.m.	Constrn. 2.89 miles road	Town Clerk; Wolf Engr. Co., Tarrytown, N. Y.
New York	New Rochelle	July 8, 2 p.m.	Constrn. bit. macadam	Joseph Walker, Comr.
Iowa	Fort Dodge	July 8, 9 a.m.	Constrn. brick pav'ts in alleys	W. Tang, City Clk.
New Jersey	Paterson	July 10, 4.30 p.m.	Constrn. 4,500 ft. cement gutter; 50 basins	Paterson Park Comm.
SEWERAGE				
Pennsylvania	W. Brownsville	July 1, 7.30 p.m.	Constrn. sewer	E. V. Kaufman, Sec'y.
New York	Yonkers	July 1, 3.30 p.m.	Install. 4 drainage pumps	Board Contract.
New York	Mount Vernon	July 2, 5 p.m.	Constrn. lateral sewers	E. W. Fiske, Mayor.
New York	New York	July 2, 2 p.m.	Constrn. brick and pipe sewer	Geo. McAneny, Boro. Pres.
Texas	Galveston	July 3, noon	Constrn. vitrified pipe	A. T. Dickey, City Engr.
New York	Schenectady	July 3, 2.30 p.m.	Constrn. 22,000 ft. vit. pipe; 774 ft. c. i. pipe, etc.	F. F. Johnson, Sec'y Bd. Contract.
Iowa	Oskaloosa	July 10, 8 p.m.	Constrn. sanitary sewers	S. V. Reynolds, Mayor.
WATER SUPPLY				
New York	New York	July 3, 2 p.m.	Constrn. water mains	H. S. Thompson, Comr.
LIGHTING AND POWER				
Ohio	Niles	July 6, noon	Furn. 100 brackets, 100 center span fixtures, reflectors, etc.	Dir. Public Service.
Washington	Spokane	July 16, 2 p.m.	Install. 94 electroliters and maintaining same	Comr. Fassett.
FIRE EQUIPMENT				
New York	New Rochelle	July 2, 8 p.m.	Constrn. fire escapes on school	Board of Education.
Massachusetts	Holyoke	July 5, 2 p.m.	Making alterations to engine house	O. C. Ferry, Asst. Clk.
BRIDGES				
Minnesota	Brainard	July 13, 3 p.m.	Constrn. highway bridge, 283 ft. long, 3-span 16-ft. roadway, floor 20 ft. above river	J. A. Erickson, Chm. Comm.
MISCELLANEOUS				
Texas	Galveston	July 1, 11 a.m.	Furn. 25,000 gal. road oil	J. M. Murch, County Aud.
Pennsylvania	Chester	July 1, 8 p.m.	Constrn. shed on wharf	Z. T. Bartleson, Chm. Comm.
New Jersey	Wallington	July 8, 8 p.m.	Bldg. Boro. Hall	C. Dekuizer, Boro. Clk.
New York	New Rochelle	July 8, noon	Bldg. library building	City Clerk.

STREET IMPROVEMENTS

Alhambra, Cal.—Hidalgo ave., between East Main st. and Mission rd., nearly one-half mile, is to be improved under new specifications providing for ornamental lighting posts in center of street enclosed by concrete curbing.

Los Angeles, Cal.—County Highway Commission will ask Supervisors to advertise bids for construction of Chatsworth Park rd., from San Fernando to park, distance of 10 miles. Plans are afoot to change from 85 to 90 per cent. asphaltic oil to secure harder road.

Washington, D. C.—Contract is about to be signed between foreign municipality and company for paving principal streets of city. Company also undertakes to keep streets along which its lines run in good condition. American consular officer writes that manufacturers of car sprinklers and street cleaning devices should get in touch with this firm. No. 9066 Bureau of Manufactures.

Miami, Fla.—City Council has ordered election August 27 for voting on \$20,000 bond issue for widening, opening and paving streets.

Des Moines, Ia.—City Council has passed resolution for paving with Portland cement following streets: On Southwest 18th st., from south end of 18th st. bridge south to Chicago, Burlington & Quincy Railway tracks; roadway for said pavement to be 20 ft. in width.

Louisville, Ky.—New highway will be opened from Broadway to State Fair Grounds in near future. Cecil ave., from point 200 ft. south of Broadway to

Greenwood ave., will be paved with asphalt, and cost will amount to nearly \$30,000.

St. Joseph, Mo.—Ordinance has been introduced appropriating \$1,500 to repair paving on Renick st., from 27th to 28th sts.

Manchester, N. H.—Common Council has given first reading to resolution to issue bonds of \$100,000 to build new streets and sewers and other needed improvements.

Elizabeth, N. J.—Ordinance has been passed providing for paving of Orchard st., from Morris ave. to Magie st.

Newark, N. J.—Ordinances have been adopted for improving of various streets.

Paterson, N. J.—Board of Public Works has determined upon having number of streets dressed with new macadam pavements.

Rochester, N. Y.—Board of Estimate and Apportionment has approved negotiations of Commissioner of Public Works Herbert W. Pierce for purchase of property for extension of Saxton st., from Dengler to Brown st. This will provide new artery for West Side, beginning at Lyell ave. and extending through to Brown st. and thus opening into 19th and 20th Wards.

Dayton, O.—Bids will be received at office of Auditor until 12 o'clock noon, July 19, for the sale of the bonds in amount of \$20,400 for purpose of providing money with which to pay city's portion of paving, grading and graveling certain streets and avenues. Also \$3,900 for purpose of providing money with which to pay for opening and extension

of Brightwood ave., and \$5,700 for purpose of providing money with which to pay city's portion of constructing sidewalks and curbing and graveling roadway on certain streets and avenues. G. W. Bish, City Auditor.

Dayton, O.—Bonds in sum of \$11,000 have been issued to provide for pavement of Bolender ave., from Cincinnati st. to Broadway; Cincinnati st., from Bolender ave. to Miami; Chapel rd.; Miami Chapel rd., from Cincinnati st. to the Big Four Railway; Miami Chapel rd., from Broadway to Big Four Railway; Carlisle ave., from Wayne ave. to Wyoming st., and North and South Market sts., between Main st. and Jefferson st.

Massillon, O.—A \$10,000 bond issue has been authorized at special meeting of City Council to pay cost of grading and constructing curbing and guttering in Runser, Spruce, Superior, Rine, Webb and North Waechter sts., and other minor improvements which may be made during summer.

Massillon, O.—City Engineer Yost submitted report, estimating cost of curbing and guttering North Waechter st. at \$895.80, and cost of grading, curbing and guttering various streets in Webb and Albright additions as follows: Superior, \$577.50; Spruce, \$228; Rine, \$288.36; Webb, \$411.90, and Runser, \$541.35. Report of Paving and Grading Committee recommending improvement of these streets was adopted. City Engineer will proceed to furnish Council with estimate of cost of paving Wellman st., from Lincoln ave. to Pine st.

according to resolution No. 942, which was introduced by Paving and Grading Committee, and adopted.

Springfield, O.—County Commissioner has acted favorably upon one-half mile State aid road petitioned for by Trustees of Goshen Township. This stretch of road which is now termed Goshen State aid, is to be of stone and is to extend from west extremity of present stone road to Union Township line. Cost to county, township and affected land owners must not exceed \$3,000.

Struthers, O.—Bids will be received at 12 o'clock noon, July 24, for purchase of bonds in sum of \$1,443.16 for construction of brick pavement in State st. Ira Eisenbraun, Clerk.

Altoona, Pa.—Blair County good roads boosters have been given positive assurance that Buckhorn rd. will be permanently improved during present year.

Chester, Pa.—Resolution has been introduced for paving of Parker st., from Third to Fifth sts.

Rock Hill, S. C.—Plans are being discussed for paving of various streets.

Everett, Wash.—Ordinance has been passed authorizing City Commissioners to obtain source of water supply in Cascade Mountains and make necessary surveys and plans for construction of same. Alex Thompson, Commissioner of Public Works; W. D. Barknuff, City Engineer.

CONTRACTS AWARDED

Decatur, Ill.—By Board of Local Improvements, for grading, curbing, paving and improving streets, as follows: E. North st., S. A. Tuttle, \$27,793; Cleveland ave., L. F. Hunt, \$14,188.40.

Havelock, Neb.—To J. C. Reice & Co., city, at \$10,000, for construction of cement and concrete sidewalks and street crossings.

Jersey City, N. J.—By Weehawken Board of Council, for general improvement of Third st., to Bitulithic Paving Co.

Morristown, N. J.—By Board of Aldermen, for macadamizing Washington st., 16 ft. wide, from Mulls st. to town line, to John B. Gougherty, on his bid of 59 cts. per sq. yd. for 6-in. macadam of native stone base trap rock dressing. Estimated cost is \$1,080. It was stated that work is designed to tide over paving of street until sewer trenches are thoroughly settled. For Spring st., contract was awarded to same bidder at 64 cts. per sq. yd. for 6-in. and dressing of trap rock. Road here will be made permanent, 16 ft. wide and extend from Morris st. to Centre st. Estimated cost is \$945.

Patterson, N. J.—By Board of Public Works, for semi-permanent pavement work, to Philip Kramer, whose bid of 48 cts. per sq. yd. was lowest. Cost of the work will be \$2,832. Streets to be improved with Tarvia X are as follows: Cross st., between Oliver and Ward sts.; Cross st., between Market and Elm sts.; Elm st., between Cross and Mill sts.; Marshall st., between Grand and Oliver sts.

Lisbon, O.—By Board of Commissioners of Columbiana County, to William Johnston, East Palestine, O., at \$14,880.33, for paving on Palestine-Lisbon roads.

Uniontown, Pa.—To John T. Hoover, city, at \$27,000, for 6,300 ft. of brick paving.

SEWERAGE

Los Angeles, Cal.—Plan of sewer system for Wilmington has been adopted by City Council, and instructions were given to proceed with ordinance of intention to lay sewers.

Santa Ana, Cal.—City will build outfall sewer, septic tank, at cost of \$15,000.

Miami, Fla.—City Council has ordered election August 27 for voting on bond issue of \$15,000 for sewerage purposes.

Chicago, Ill.—Sanitary District Trustees have ordered chief engineer to prepare plans and specifications for sewerage channel extending from Glencoe to Wilmette and emptying into north shore diversion channel. Improvement for benefit of residents of north shore suburbs, will cost about \$700,000.

Manchester, N. H.—Common Council has given first reading to resolution to issue bonds of \$100,000 to build new sewers and streets and other needed improvements.

Newark, N. J.—In field with six other bidders, Donlon Contracting Co., of Brooklyn, again submitted lowest proposal for Section 15 of proposed Passaic trunk sewer. Latest bid of Donlon concern was \$278,170, which amount is \$60,751.50 more than price at which concern agreed to perform same work when the original bids were opened. Bidders besides Donlons were McCauley-Manton Co., of Brooklyn; Cantrell Construction Co., of Philadelphia; Mullin, O'Riordan & Miller, of Boston; J. F. Cogan & Co., of New York; C. B. Clark & Co., Baltimore, and Union Building & Construction Co., of Passaic.

Mamaroneck, N. Y.—Plans and specifications for sewage disposal works are being prepared by Hering & Gregory, Consulting Engineers, 170 Broadway, New York. J. M. Duffy is Village Engineer.

Schenectady, N. Y.—Board of Contract and Supply has rejected all eight bids received for laying Second Ward (Van Vranken ave.) sewer system, and decided to readvertise. It has been discovered that small creek north of Alexander st. will permit natural surface water drainage of part of district and that much of material and labor originally specified will be unnecessary. Lowest bidder was Frank George, of Batavia, \$56,582.74, with Kellam & Shaffer Co., of this city, \$56,915.63, next.

Dayton, O.—Bids will be received at office of Auditor until 12 o'clock noon, July 19, for sale of bonds in amount of \$35,000 for purpose of construction of storm water sewers in certain streets and avenues. Also sum of \$8,000 for purpose of providing money with which to pay the city's portion of cost of construction of sanitary sewers in Sewer Districts Nos. 3, 4 and 8. G. W. Bish, City Auditor.

CONTRACTS AWARDED

Springfield, Ill.—Contracts for placing of two sewers have been let by Commissioner Hamilton and Board of Local Improvements. Contract for sewer in 14th st., from Laurel st. to South Grand ave. and that for the 18-in. sewer in Ash and Miller sts., from 15th to Laurel sts., were let to Henry Nelch & Sons.

Julietta, Ind.—By Board of Commissioners of Marion County, to Denny J. Bush, Indianapolis, for construction of sewage disposal plant for County Asylum for Incurable Insane, at Julietta.

Doniphan, Mo.—To Frank P. Bell, Rock Island, Ill., for construction of system of sanitary sewers.

Patterson, N. J.—Contracts for new sewers were awarded as follows: Harrison and Summer sts., Peter L. Bergin, \$860.80; Martin st., Frank Puglia, \$1,251.30; Lawrence st., Peter L. Bergin, \$587.67; West 18th and West 28th sts., Frank Puglia, \$1,731.20; Burhans ave., Joseph Puglia, \$921; East 16th st., Jos. Puglia, \$555; East 19th st., Joseph Puglia, \$722.50; East 25th st., Joseph Puglia, \$930; 20th ave., Frank Puglia, \$917; Vernon and Dundee aves., Frank Puglia, \$1,399; Preakness ave., Union ave. to Hill st., Frank Puglia, \$1,300.70; Preakness ave., Totowa to Union aves., and Union ave. to Edmund st., Frank Puglia, \$1,499; Edmund st., Frank Puglia, \$2,919;

Totowa ave., Frank Puglia, \$812.60; Harrison st., East 18th st. to York ave., Peter L. Bergin, \$398.23; Hazel st., Jos. Puglia, \$559.10.

Bismarck, N. Dak.—By Board of City Commissioners, to Haggart Construction Co., Fargo, N. Dak., for construction of 8- and 10-in. lateral sewer extension on 10th st.

Freedom, Pa.—To J. L. Conner, for construction of sanitary sewers in Ninth st.

WATER SUPPLY

Claxton, Ga.—Bids will shortly be asked for installation of municipal water works.

Charleston, Ill.—Bonds in sum of \$40,000 have been sold for water works improvements.

Zanesville, O.—Plans and specifications for new and improved water supply are being prepared by Hering & Gregory, Consulting Engineers, 170 Broadway, New York.

Philadelphia, Pa.—As result of action of Water Committee Councils will receive favorably report on ordinance making installation of meters permissive.

Polytechnic, Tex.—Polytechnic has agreed to buy Kelly-Alvord water system that was in use before incorporation as source of water supply for that suburb and has been since operated as private water company. It will assume control July 1.

Bridgewater, Va.—Sum of \$25,000 in bonds has been voted for construction of water works.

Dublin, Va.—Construction of water works, to cost \$10,000, is proposed.

CONTRACTS AWARDED

Ashton, Ill.—For water works, to three different companies, total amount being \$36,295.75. Distribution system, which includes all mains and pipes, was awarded to Des Moines Bridge & Iron Works Co., for \$29,999. Following are the bids on distribution system: Marquette Construction Co., \$33,544.20; John R. Griffith, \$31,666.10; H. G. Goelitz, \$33,720.95; Cook Construction Co., \$28,573.65; Des Moines Bridge & Iron Works Co., \$29,999. There were four bids on elevated tank, and one of Chicago Bridge & Iron Works Co. was accepted. They were as follows: Kennicott Co., \$3,315; Cook Construction Co., \$3,385; Des Moines Bridge & Iron Works Co., \$3,012; Chicago Bridge & Iron Works Co., \$3,280. There were five bids on well and contract was let to M. Holleran, of Indianapolis, Ind. The bids were as follows: M. Holleran, \$3,016.75; J. C. Burk, \$3,424.61; F. M. Gray, \$4,091.61; J. P. Miller, \$3,872.50; Cook Construction Co., \$5,141.

Coffeyville, Kan.—To F. W. Yale, city, for pipe laying for water works.

Holyoke, Mass.—By Water Commissioners, for pipe and valves to be used on new Smith's Ferry water extension. Contract for pipe to United States Cast Iron Pipe & Foundry Co., of Philadelphia, for \$22.60 a ton. Pipes are of different sizes, measuring, 6-, 8 and 10-in. and line will be about 3½ miles long. Total cost of pipes will come to approximately \$15,000. Contract for the valves was awarded to Chapman Valve Mfg. Co., of Indian Orchard, their bid being \$11 for 6-in., \$16 for 8-in., and \$22 for 10-in. valves. There are 35 valves in all and contract totals up to \$532.

LIGHTING AND POWER

Springfield, Ill.—Furnishing of all municipal buildings with electric current for lighting purposes, with power generated at pumping station, is plan which will be carried out by City Commissioners as soon as necessary apparatus has been installed.

Boston, Mass.—For building Section A of Dorchester tunnel in Winter st., about 500 ft. long, as follows—(1) Coughlan & Shells Co., 43 Tremont st., Boston (awarded contract); (2) Mullen, O'Riordan & Miller, 71 Alford st., Charlestown; (3) Coleman Bros., Boston; (4) McGovern & Co., 6 Beacon st., Boston; (5) Hugh Nawn Contracting Co., 82 Savin st., Roxbury; (6) John E. Palmer, 1012 Old South Bldg., Boston; (7) Bruno & Petitti, 18 Tremont st., Boston; (8) Jones & Meehan, 24 Oakdale st., Jamaica Plain:

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
29,000 cu. yds. excav.....	\$3.50	\$4.00	\$4.40	\$4.60	\$4.50	\$4.90	\$5.50	\$8.60
1,300 cu. yds. masonry (to remove).....	8.00	8.00	8.00	7.00	7.00	12.00	10.00	15.00
9,000 cu. yds. concrete masonry.....	9.00	10.00	9.50	9.50	10.50	12.00	13.50	15.00
1,500 cu. yds. cinder concrete.....	6.00	7.00	6.00	7.00	5.00	10.00	8.00	6.00
300 cu. yds. brick masonry.....	18.00	15.00	16.00	16.00	20.00	18.00	18.00	25.00
100 lin. ft. 6 to 12-in. clay pipe.....	.50	1.00	.50	1.00	.50	1.00	1.00	3.00
250 tons reinforcing rods (to set).....	8.00	10.00	9.00	10.00	8.00	12.00	15.00	25.00
250 tons steel and iron (to set).....	9.00	20.00	15.00	15.00	10.00	20.00	15.00	25.00
500 sq. yds. Portland cement mortar.....	.40	.50	.60	.50	.50	.50	.40	1.00
20,000 sq. yds. prepared textile or asphalt.....	.40	.50	.45	.30	.50	.60	.60	.50
20,000 sq. yds. tarred felt and pitch.....	.30	.40	.25	.60	.30	.30	.40	.50
Other work and risks not covered by other items....	15.00	17.50	20.50	14.50	20.00	27.00	35.00	25.00
500 lin. ft. 16-in. cast iron pipe.....	.50	2.00	1.25	1.00	1.00	1.00	2.00	6.00
850 lin. ft. 8- to 12-in. cast iron pipe.....	.50	1.00	1.00	1.00	.80	.80	1.50	5.00
Totals	\$241,475	\$276,600	\$278,925	\$283,750	\$289,580	\$340,630	\$376,475	\$485,950

Macon, Ga.—Bids will be advertised for five-year lighting contract from Jan. 1, 1913.

Portsmouth, Va.—Council has adopted report of Finance Committee, which recommended that five cluster light system for High st. "White Way" be established and made special appropriation of \$520 for their maintenance for balance of this year and another appropriation of \$1,554 for their installation.

FIRE EQUIPMENT

Los Angeles, Cal.—Plans and specifications for fire engine house on Western ave., north of Second st., must be modified about \$5,000 worth, is Council's instruction to Board of Public Works.

Nevada City, Cal.—Purchase of auto chemical engine is being considered.

Monmouth, Ill.—Purchase of 500 ft. of hose is being discussed.

New Albany, Ind.—Ordinance is being considered by City Council providing for appropriation of \$4,000 for purchase of auto fire truck.

Lansing, Mich.—Purchase of new auto fire engine is being considered.

Perth Amboy, N. J.—Sum of \$15,000 may be appropriated for improvements to Fire Department.

Oklahoma City, Okla.—City is considering purchase of auto chemical engine.

BRIDGES

Dayton, O.—Fifteen thousand dollars constitute amount for which provision is made in issuance of bonds for change of plans in connection with the Keowee st. river bridge.

Forth Worth, Tex.—Plans are being made for construction of four new bridges, to cost about \$600,000.

CONTRACTS AWARDED

Danville, Ill.—By Bridge Committee of Board of Supervisors and Highway Commissioners of Oakwood, to W. H. Hoffman, La Fayette, Ind., at \$2,743, for construction of 60-ft. span reinforced concrete arch bridge over Minnehaha Creek.

Maywood, Ill.—To Fred D. Mateer, 9 S. La Salle st., Chicago, at \$36,500, for construction of 200-ft. concrete bridge for Proviso over Des Plaines River, near Maywood.

MISCELLANEOUS

Miami, Fla.—City Council has ordered election August 27 for voting on following bond issues: Property for docks, parks, etc., \$60,000; for payment of existing indebtedness, \$20,000; for purpose of constructing furnace for destroying garbage, \$5,000.

Waycross, Ga.—Special meeting of City Council will be held to consider resolution calling election for issuance of at least \$100,000 in bonds of public improvements.

PROPOSALS

SEWERS

NOTICE TO CONTRACTORS

Schenectady, N. Y.

Sealed proposals will be received by the Board of Contract and Supply of the City of Schenectady, until 2:30 p. m., Wednesday, July 3, 1912, at the City Hall Annex, for the construction of Sanitary and Surface Water Sewers in the Second Ward. The approximate estimate of the work to be done is as follows:

- 8,000 cu. yds. of earth excavation;
- 10,862 cu. yds. of rock excavation;
- 340 cu. yds. of 1-3-5 Portland cement concrete;
- 7,501 lin. ft. of 8-in. vitrified tile;
- 4,490 lin. ft. of 10-in. vitrified tile;
- 4,168 lin. ft. of 12-in. vitrified tile;
- 5,048 lin. ft. of 15-in. vitrified tile;
- 1,029 lin. ft. of 18-in. vitrified tile;
- 282 lin. ft. of 20-in. vitrified tile, double strength;
- 36 lin. ft. of 8-in. cast-iron pipe;
- 132 lin. ft. of 10-in. cast-iron pipe;
- 168 lin. ft. of 12-in. cast-iron pipe;
- 348 lin. ft. of 16-in. cast-iron pipe;
- 890 lin. ft. of manholes, vertical measurement;
- 40 catchbasins, complete;
- 68,000 board feet of lumber sheathing;
- 68,000 board feet of lumber foundations.

Plans and specifications may be obtained from the office of the City Engineer, W. Thomas Wooley, by making a deposit of Ten (\$10.00)

Dollars, which deposit will be refunded at such time as the plans and specifications shall be returned.

All bids must be made upon the printed pages which are part of this specification and enclosed in a sealed envelope directed to the Secretary of the Board of Contract and Supply (and endorsed on the outside of the envelope "Proposal for Constructing Sanitary and Surface Water Sewers in the Second Ward.")

Each bid must be accompanied by a draft or a certified check for Four Thousand (\$4,000) Dollars issued by a National or State bank, in good credit with the State of New York, and made payable to the "City of Schenectady."

The Board of Contract and Supply reserves the right to reject any or all bids.

FRED F. JOHNSON,

Secretary Board of Contract and Supply.
(26)

DRAINAGE SYSTEM

Office of the
Board of Street and Water Commissioners,
of the City of Newark.

City Hall, Newark, N. J., June 22, 1912.

Sealed proposals will be received at this office from 3:15 to 3:30 o'clock p. m., of Wednesday, the third day of July, 1912, and opened at the last-named hour, at a public meeting of the Board to be held at said time and place, for the construction of the Vailsburg Drainage System, Middle Division.

The following is about the amount of the work to be done, and the materials to be furnished in the construction and completion of said work, and upon which bids will be compared:

SECTION 1.

- Twenty-seven hundred and thirty (2,730) feet of eight by twenty foot (8 ft. x 20 ft.) concrete-lined open channel. Alternate bids are requested for monolithic and slab construction;
- Nineteen hundred and twenty (1,920) feet of seven by twelve (7 ft. x 12 ft.) foot concrete sewer;
- Sixty (60) feet of eighteen (18) inch double strength vitrified salt-glazed pipe sewer;
- Thirty-six (36) feet of eighteen (18) inch cast-iron pipe sewer;
- Eight (8) manholes over concrete sewer complete;
- Two (2) manholes over pipe sewer complete;
- One (1) basin with concrete head complete;
- Fifty (50) thousand feet B. M. foundation timber;
- Two hundred (200) cubic yards broken stone;
- Twenty (20) cubic yards extra concrete;
- Twenty (20) hundred pounds extra steel reinforcements.

SECTION 2.

- Twenty-three hundred and thirty (2,330) feet of five foot six inch by eight foot (5 ft. 6 in. x 8 ft.) concrete sewer;
- Fourteen hundred and thirty (1,430) feet of five foot six inch by six foot nine inch (5 ft. 6 in. x 6 ft. 9 in.) concrete sewer;
- Seven hundred and forty (740) feet of eighteen (18) inch double strength vitrified salt-glazed pipe sewer;
- Two hundred (200) feet of fifteen (15) inch double strength vitrified salt-glazed pipe sewer;
- Nineteen (19) manholes over concrete sewer complete;
- Seven (7) manholes over pipe sewers complete;
- Fifteen (15) basins with concrete heads complete;
- Fifty (50) thousand feet B. M. foundation timber;
- Two hundred (200) cubic yards broken stone;
- Twenty (20) cubic yards extra concrete;
- Twenty (20) hundred pounds extra steel reinforcement.

Each proposal must be enclosed in a sealed envelope, properly endorsed with the name of the bidder and of the improvement, and directed to the Board of Street and Water Commissioners of the City of Newark.

Bidders will state their prices in writing as well as in figures.

Bidders must specify in their proposals that, should the above work be awarded to them, they will bind themselves to finish and complete the

same within the following number of consecutive working days:

Section 1.—One hundred and fifty (150) days;
Section 2.—One hundred and twenty-five (125) days.

The plans and specifications of the work can be examined at the office of the Chief Engineer of the Board of Street and Water Commissioners at the City Hall. Said proposals to be accompanied by the consent, in writing, of two sureties, or a surety company qualified to do business in New Jersey, who shall, at the time of putting in such proposals, qualify as to their responsibility in the amount of such proposal, and bind themselves that, if the contract be awarded to the person or persons making the proposal, they will, upon its being so awarded, become his or their sureties for the faithful performance of said work; and that, if the person or persons omit or refuse to execute such contract, they will pay to the City of Newark any difference between the sums to which he or they would have been entitled upon completion of the contract and that which the City of Newark may be obliged to pay the person or persons by whom such contract shall be executed.

The Board of Street and Water Commissioners of the City of Newark reserve to themselves the right to accept or reject any or all proposals for the above work, as they may deem best for the interest of the City.

By direction of the Board of Street and Water Commissioners of the City of Newark.

M. R. SHERRERD, Chief Engineer.

BIDS FOR BUILDING BRIDGE

Sealed bids will be received at the office of the County Auditor of the County of Crow Wing, at the County Court House, in the City of Brainerd, Minnesota, until 3 o'clock p. m., July 13, 1912, for building a bridge on highway across Crow Wing River, between Sections 32 and 33, Township 133 north, of range 29 west 5th P. M., in the counties of Cass and Morrison, State of Minnesota. Such bridge to be 283 ft. long, three span, 16-ft. roadway clear, floor of bridge 20 ft. above river bed at center, foundation constructed of concrete abutments and tubular steel piers, according to plans and specifications now on file with the said County Auditor of Crow Wing County. At the same time and place bids will be received from any bidder, on his own plans and specifications for a bridge of equal service and durability at the same location.

Each proposal must be accompanied by certified check to the amount of 10 per cent. of his bid, payable to the Chairman of the committee hereinafter named. The Committee representing the Counties of Crow Wing, Cass and Morrison, reserves the right to accept or reject any and all bids and proposals.

J. A. ERICKSON,

Chairman of Committee representing Crow Wing, Cass and Morrison Counties, Minn.
(26-1)

FIRE EQUIPMENT

NOTICE TO MANUFACTURERS

The Secretary of the Borough of Sharon, Pa., will receive proposals until 12 o'clock noon, Aug. 6, 1912, for the purchase of an automobile fire engine. Manufacturers will submit specifications.

OSCAR J. DENNY,

Borough Secretary.
(26-1-2)

PAVING

PASSAIC, N. J.

June 17, 1912.

Separate sealed proposals will be received by the Board of Commissioners of the City of Passaic, at the City Hall, Passaic, N. J., Thursday forenoon July 12, 1912, at 10:30 o'clock, for the construction of approximately 11,175 sq. yds. of pavement upon a concrete base, upon Bloomfield Avenue, upon Prospect Street and upon Howe Avenue. Bids will be accepted for

June 27, 1912

Municipal Journal

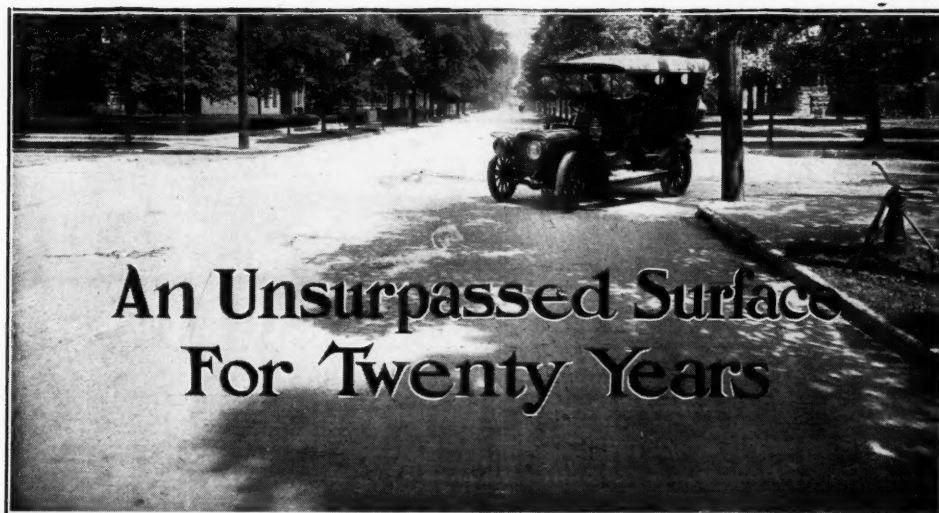
(WEEKLY)

DEVOTED EXCLUSIVELY TO MUNICIPAL NECESSITIES

Volume XXXII., No. 26.

50 UNION SQUARE, NEW YORK.

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An Unsurpassed Surface
For Twenty Years

SOUTH Sixth Street, Terre Haute, Indiana, was paved with vitrified brick in 1892. During the 20 years intervening this pavement has carried its full share of the traffic of this hustling city—population 36,000 in 1900 and 58,000 in 1910.

The accompanying photograph shows the condition of the pavement on this street to-day. The pavement is not merely still in use—but has grown more perfect with age. The wear is scarcely discernible to the eye or measurable with an instrument. What is more, it looks good for at least another 20 years.

What other type of pavement actually

stands up in service like properly laid vitrified brick?

The pavement on this street was laid according to the methods developed and approved by this Association. Only very slight revisions in these original methods have been found necessary after years of experience.

The recent edition of our "No. 1 Standard Specifications for Brick Pavement" gives these approved methods in detail.

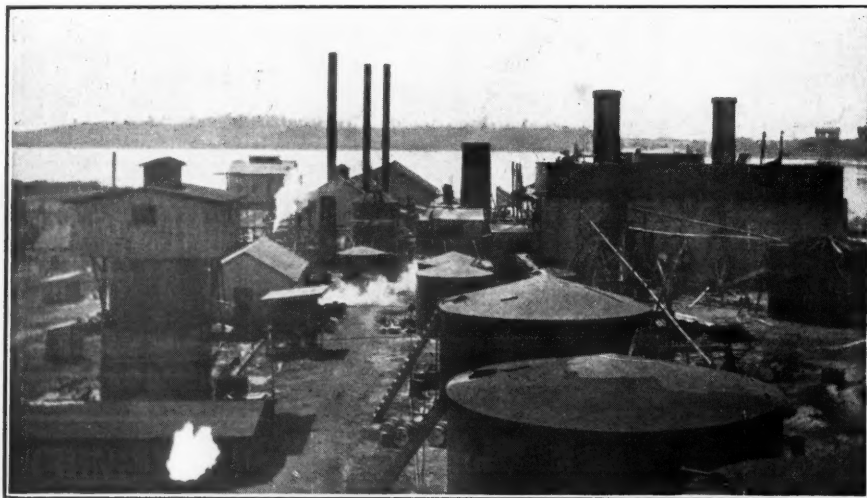
These specifications or any other information regarding brick pavement furnished on request.

The National Paving Brick Mfrs. Association

Will P. Blair, Secretary

Engineers Building

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Refinery, East Brooklyn, Baltimore, Md.

Capacity, 50,000 tons per year.

“Aztec” Asphalt

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Better Pavements at Lower Cost

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By actual test it has been proved that “Aztec” Asphalt is far less susceptible to changes in temperature than any other asphalt of equal ductility.

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“The Kind You Will Eventually Use”

Our other products include “Aztec” Road Binder for bituminous road construction, “Aztec” Road Oil—not merely a dust layer, but forms an asphaltic surface—and “Aztec” Bitose for filling brick and granite pavements.

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United States Asphalt Refining Co.

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Shale Paving Blocks Best Quality Fire Clay

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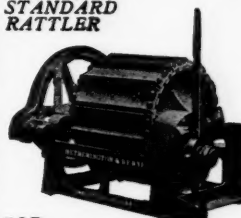
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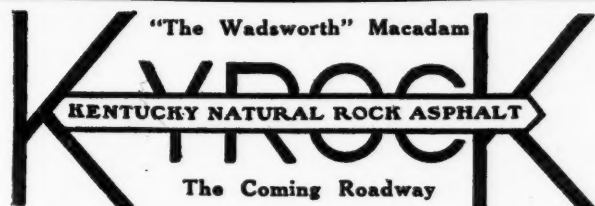
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Glutrin bound roads are colorless — permanent — increasingly hard with age.

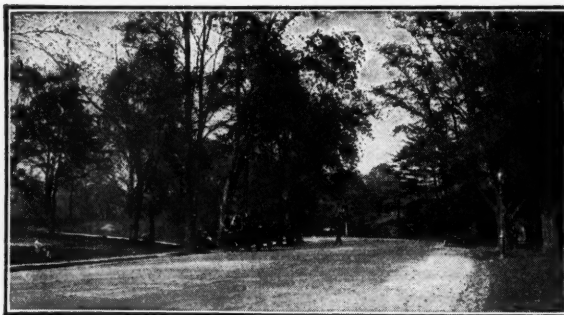
Why not glutrin on your roads?

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Between a heavy road oil and a solid binder. Specially suitable for roads that have been stripped of the original surface and have the top course of stone exposed.

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Practically solid products, to be incorporated with the road material, either by the penetration or the mixing method. "C" is slightly harder than "B"; for use under warmer climatic conditions.

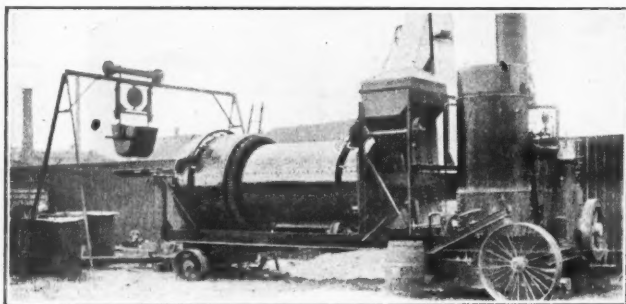
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MUNICIPAL JOURNAL

50 Union Square

New York

BERMUDEZ ROAD ASPHALT

"IT STAYS PUT"

THIS LETTER
 was recently
 written by a
 well-known as-
 phalt chemist
 to the engineer
 of a southern
 city.

¶ It states so
 clearly the nec-
 essary charac-
 teristics of a
 road material
 that it is re-
 printed here for
 the information
 of all concerned
 in road con-
 struction.

C O P Y

Mr.....City Engineer,

.....

Dear Sir:—

In reply to your inquiry, will say that the essential characteristics of a satisfactory road binder are that it shall be highly cementitious without being excessively fluid or brittle, and sufficiently cohesive without being excessively sluggish and non-cementitious. As regards bituminous binders, adhesiveness and cohesiveness are opposite physical properties, and it so happens that excessively adhesive binders, like coal tar, are lacking in cohesive properties; and excessively cohesive materials, like blown oils, are lacking in adhesive properties.

It is desirable to employ a cement as a binder in road construction, rather than a lubricant or grease, and that cement should, in the first place, be sufficiently fluid at working temperatures to mix readily with the cold road metal, instead of lying on a mat on the surface, and in the second place, not to be so susceptible to temperature changes after application that it will "bleed" in summer or become brittle and ravel in winter.

Up to the present time solid bituminous binders manufactured from petroleum have not possessed the proper balance of adhesiveness and cohesiveness which is a characteristic of the road asphalt manufactured from Bermudez Lake Asphalt, and the chief reason for that being the case is that the artificial binders are made largely from semi-paraffine oils and are greases rather than cements, or if made from asphaltic oils are distilled quickly at high temperatures and are lacking in body or cohesiveness.

The natural conditions under which the Bermudez Lake Asphalt is formed, are long exposure to tropical light, heat and air. The result is a peculiar substance which has never been duplicated artificially except in color.

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By.....

The Barber Asphalt Paving Company
PHILADELPHIA, PENN.

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THAT
**YELLOW PINE
CREOSOTED BLOCKS**
ARE
**Durable, Economical,
Noiseless**

Yellow Pine Blocks are especially adapted for use on streets of heavy traffic—the more severe the test, the plainer is their superiority.

The heaviest travelled streets of the country, such as Broadway, Reade and Duane streets, New York; Tremont street, Boston; La Salle street, Chicago, are paved with Wood Blocks. In practically every case there has been absolutely no expense for repairs, though the pavements have been laid for from 5 to 15 years. The original cost is the only one, while with other pavements there is a constantly increasing annual expense for repairs.

At the end of a few years the increased cost of Wood Block is made up and from that time on every year shows a clear saving.

At the same time Wood pavement has the additional advantages of being noiseless, dustless and sanitary.

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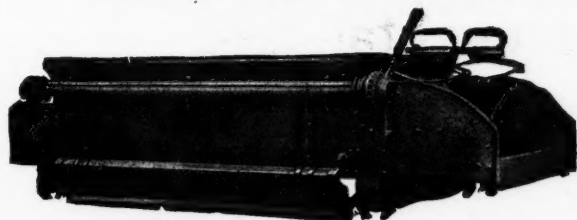
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Easily and Permanently

Don't waste time and labor CUTTING or DIGGING weeds and grass out of roadways, gutters, streets and tracks. Simply sprinkle them with a little diluted

KEY BRAND WEED KILLER

Puts them out of business so they won't come back to bother you for years, because it kills the roots.

One Application is Enough.—The hardest, most impudent, most persistent weeds that ever grew are quickly killed—killed to stay killed—by one application of Key Brand Weed Killer. And you can apply it in a fraction of the time that cutting or digging them would require.

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GRANULATED CALCIUM CHLORIDE
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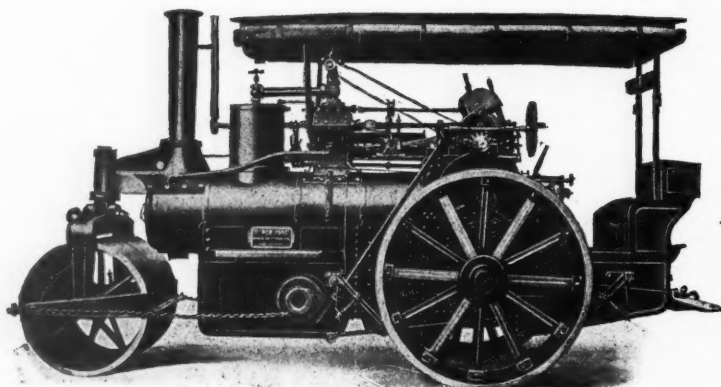
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Largest Day's Work

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4,500 sq. ft. laid in one day with two finishers and 18 workmen.

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Concrete and Road Building Machinery, Industrial Car and Track Contractors' Equipment

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The Good Roads Machinery Company, Inc., Marathon, N. Y.

The Cummer One-Car Portable Asphalt Paving Plant

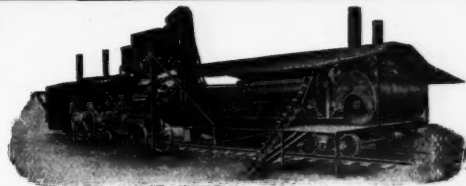
For Sheet Asphalt and Asphalt Macadam

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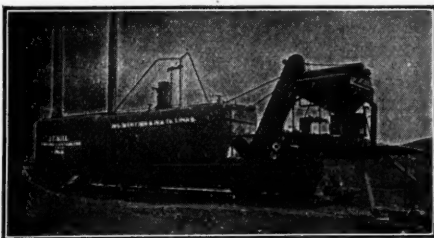
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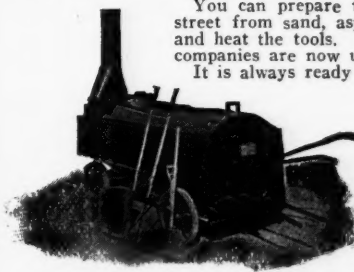
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REPAIR YOUR OWN PAVEMENTS WITH THE Hooke Portable Asphalt Plant

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With this plant old asphalt may, if sound, be reheated and used over again to advantage in repairing pavements.

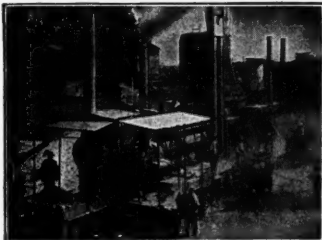
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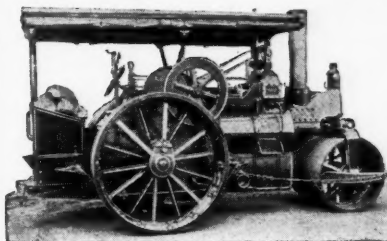
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Dunn Wire Cut Lug Brick

are superior to repressed brick in density, bonding strength and durability, yet cost no more. - - Ask for particulars.

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All sizes

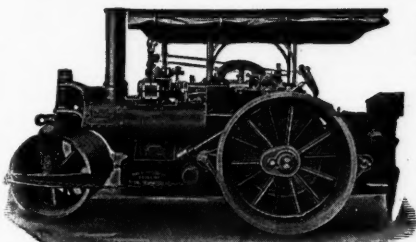
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Made in all types and all sizes for all purposes. 2½ to 20 tons.

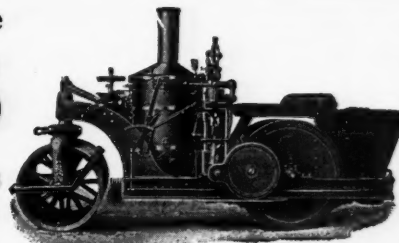
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E.M.F. '30' Flanders '30'

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—See our physical and chemical laboratories and prove to your entire satisfaction, our statements that we make in regard to our physical and chemical tests of materials.

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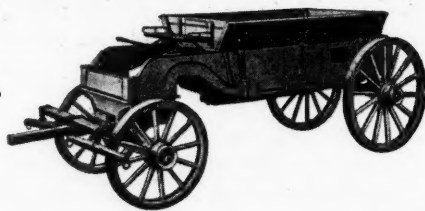
—Do All This you would be thoroughly convinced and enthused over the Studebaker product.

To Do This would mean a visit to South Bend, but we have never had a visitor who, having once seen our plant, our methods and our organization, no matter how skeptical he may have been, but was convinced. You would be.

We Invite Your Closest Investigation of Our Factories and Products at Any Time. We Want the Chance to Prove Our Claims which apply, not only to Dump Wagons, but to our entire product.



The Studebaker "New Ideal" Dump Wagon



ARE YOU TIRED

of extremely short coupled wagons that do not hold the rated capacity in cubic yards? Have you been buncoed into believing that your dumping wagons were drawing unusually easy when, as a matter of fact, your loads are a thousand pounds or more short.

Have you ever measured up a few makes of dumping wagons with your own hands and your own yardstick and figured out the capacity for yourself?

We urge you to do this with a Watson and then with any number of other dumping wagons. There are some surprising facts in store for you. Just try it. Meanwhile maybe you would like the Watson printed matter.

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PHILADELPHIA
604 Witherspoon Bldg.

CHICAGO,
607 Security Bldg.

PITTSBURG,
1102 Farmers Bank Bldg.

15

The "Aurora" Rock Crusher

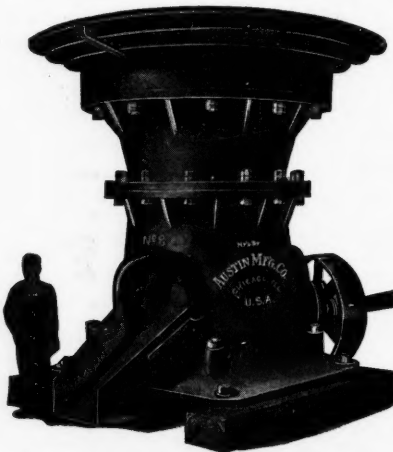


The perfection of strength, lightness and simplicity in Jaw Crushers.

It has two strokes to each revolution of the shaft which increases the product, and reduces vibration.

It has fewest moving parts, hence the least wear of any crusher on the market.

Built in stationary and portable styles.



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made in Nine sizes, with capacities from 50 to 5,000 tons per day. Fitted with "Supported" or our improved "Suspension" shaft. The small sizes are also furnished in portable form. Thousands of our Crushers in use.

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NEW YORK, THE AUSTIN-WESTERN CO., Ltd., CHICAGO

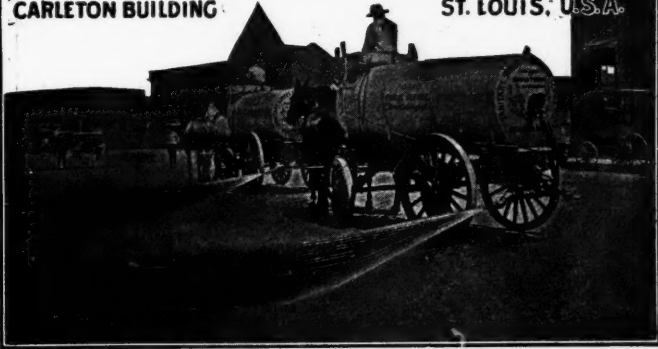
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1

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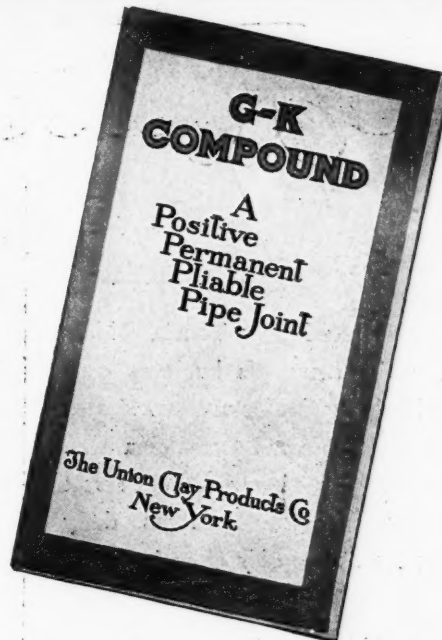
Matchless Sanitary Street Cleaning Machine

A simple, common-sense machine, that does away with unnecessary work. Instead of piling the dirt along the street, then making a second trip to collect it, as is ordinarily done, simply push the dirt into the dust pan, and deposit in can by means of lever. No second trip, no shoveling, all accomplished at once. This method accomplishes 50% more than the old way.

Extracts from Letters
London, Ontario, says:
Have used your Hand Cleaners for some ten years and find them most excellent. Could not do without them.
New Bedford, Mass., says:
Consider them the best machines for the purpose on the market. They have given the best of satisfaction.



The Matchless Street Cleaner Co.
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Our new Illustrated Pamphlet contains information of value to all engineers and contractors engaged in sewer construction.

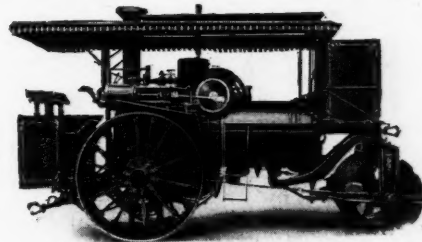
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Under the Management of The Waterproofing Co.,

150 E. 36th Street - - NEW YORK

THE STEAM GUIDED ROLLER



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A RUBBER SQUEEGEE CLEANER



that replaces the Sprinkler, Sweeper and Scraper, and cleans a street as a rubber squeegee does a window.

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Kindling Machinery Co.
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"Used in Every
Line of Business"

The *Autocar* Motor Truck, widely used by the country's business concerns, is doing important work also in the service of many municipalities. In police, fire, health and street sprinkling departments it is daily proving its superiority over horses.

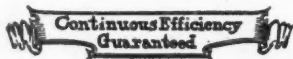


The *Autocar* sprinkling car saves time, saves money, saves horses. Wets the ground evenly because of exact regulation of speed. Never puddles the roads. Does the work of several horse-drawn sprinkling carts.

Autocar police patrols and *Autocar* ambulances make possible a speed and efficiency never attained with horses.

The *Autocar* is used in every line of business and is endorsed by every owner. More than 600 private and public concerns have adopted our cars, owning from one to eighty each.

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*Preserves Roads
Prevents Dust~.*



Country Club Road, Greenville, S. C.

What the Government Found Out About Tarvia

THE Office of Good Roads, Department of Agriculture, built an experimental road at the Country Club at Greenville, S. C., in 1909, following very closely our specifications for two-coat penetration work, using "Tarvia X."

After two years the above photo of the road was taken at a point where it adjoins a stretch of plain macadam. The intention of the Department was to find out just how much difference the Tarvia treatment made.

The picture tells the story. The plain macadam in the foreground is *worn out*. The tarviated surface is in *perfect condition* and the difference is so great that a clear division line is seen in the above photograph.

This is a typical instance of the success of Tarvia as a road binder. A tarviated road is automobile proof, waterproof, dustless and mudless. It is so much cheaper to maintain that the cost of using Tarvia in the construction is more than compensated for.

Tarvia is made in three grades:

"Tarvia X" for use in constructing roads and pavements.

"Tarvia A" for hot surface applications.

"Tarvia B" (applied cold) for dust prevention and road preservation.

Tarvia booklet mailed free to anyone interested. Address our nearest office.

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PROPOSALS

sheet asphalt, three-inch asphalt blocks, brick, Medina and granite block pavement.

The work must be completed within the following time, viz.:

Bloomfield Avenue—35 consecutive working days.

Prospect Street—33 consecutive working days.

Howe Avenue—20 consecutive working days.

Plans may be seen and specifications and form of proposal obtained upon application in person at the office of the City Engineer, Municipal Bldg., Passaic.

Bids must be accompanied by a certified check in the sum of five per cent. of the amount of the bid.

The Board of Commissioners reserves the right to reject any or all bids or to accept such as it may deem to be the best interests of the city.

WILLIAM A. REID,

Director of the Dept. of Streets and Public Improvements.

THOMAS R. WATSON, City Clerk.

Dated June 17, 1912.

ERECTION OF CITY HALL

In compliance with an order made by the Board for Council of the City of Winchester, Ky., at its regular meeting held June 7, 1912, bids will be received by J. A. Hughes, Mayor of said city, for the erection of the City Hall Building (above foundation), according to the plans and specifications therefor, now on file at the office of the City Engineer. Bids to be in writing, sealed and delivered to the Mayor of said city and by him opened in the presence of the Council on Friday, July 5, 1912, at 7:30 P. M.

S. B. TRACY, City Clerk.

25-26

PROPOSALS

PAVING

ODELL, ILL.

June 17, 1912.

Sealed proposals will be received until 2 P. M. Monday, July 1, 1912, and then publicly opened in the Council Chamber of the Village of Odell, Ill., for approximately: 13,000 square yards vitrified brick paving; 7,000 lineal feet gravel concrete curb; 3,000 lineal feet 9-inch to 15-inch tile pipe sewer. Bids must be made on a form which will be furnished for the purpose, sealed and addressed to the President of the Board of Local Improvements, and no bid will be considered unless accompanied by cash (or check payable to the President of said Board and certified by some responsible bank) to an amount which shall not be less than ten per centum of the aggregate amount of such bid. Bidding blanks and specifications may be had and plans may be seen at the office of the Village Clerk, Odell, Illinois, or at the office of the Aetna Engineering Bureau, 17 North LaSalle St., Chicago.

THEODORE TRECKER, Clerk,
Village of Odell, Ill.

NOTICE TO SEWER CONTRACTORS

LEWISTOWN, MONTANA.

June 17, 1912.

All bids were rejected on the 15th, by the Council, and ordered readvertised, as follows:

NOTICE IS HEREBY GIVEN that the undersigned, at his office in the Council rooms, Lewistown, Montana, will receive sealed proposals until 3 o'clock P. M., July 1, 1912, for the furnishing of all labor and materials for the construction of Sanitary Sewers, aggregating about 10,500 feet of vitrified pipe, from twelve

PROPOSALS

(12) to twenty-seven (27) inches, thirty-one (31) manholes, one (1) flush tank, 21,000 cubic yards excavation.

Plans, Specifications, Profiles and blank forms on file in the City Engineer's office.

Copies furnished upon application and the receipt of Ten Dollars (\$10.00) to cover cost of same.

FRANK P. MARSHALL, City Clerk.

W. M. McCLEAN, City Engineer.

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Twenty horse-drawn street watering carts, mostly steel tanks, and all in good condition.

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FOR SALE

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Wissler Transit (Level).....	70.00
Beckman Transit (Reconnaissance).....	70.00
Young & Son Level (18" Telescope).....	60.00
Keuffel & Esser Level (18" Telescope).....	70.00

Send for complete list.

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Monadnock Block Chicago

Northern Fire Apparatus Co.

MINNEAPOLIS, MINN.

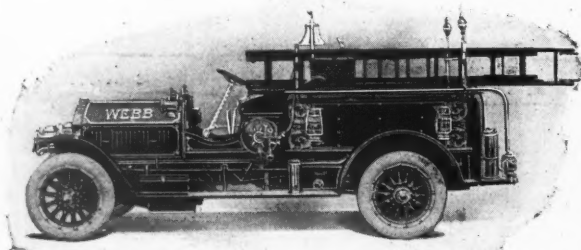
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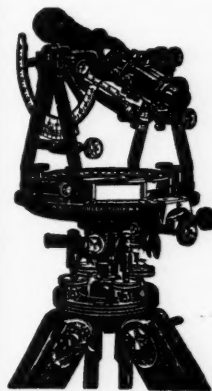


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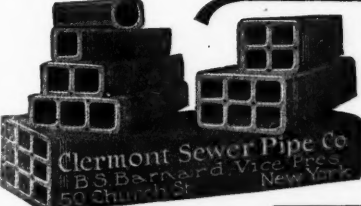


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B. B. Bernard, Vice Pres.
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Announcement

James Boyd & Bro., Inc., of Philadelphia, makers of the celebrated Boyd Fire Apparatus, have taken over the entire business of the



Chemical Fire Engine Manufacturing Co.

Henceforth the Kanawha Fire Apparatus, widely known for its excellency and efficiency,

**Will be Manufactured Exclusively
at the Boyd Plant in Philadelphia**

in conjunction with the Boyd Apparatus.

Under the terms of the sale, the patent rights, good will and equipment of the Kanawha factory at South Charleston, W. Va., have been transferred to and are now the property of James Boyd & Bro., Inc.

Kanawha Chemical Equipment, admittedly the most effective in its field, and Boyd construction, guaranteed for speed, power and reliability, are combined. This united organization is now prepared to supply the most efficient and serviceable motor-driven chemical fire apparatus the world has yet seen.

James Boyd & Bro., Inc.

Wharton and 25th Streets

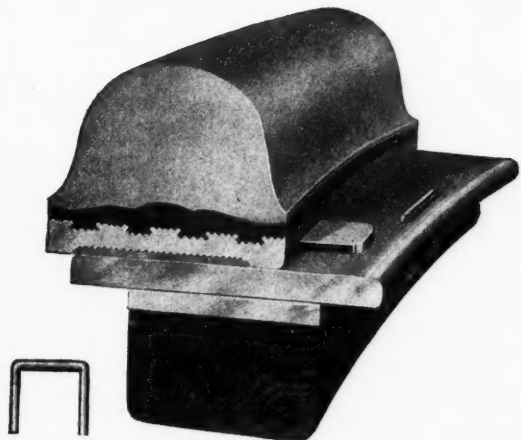
Philadelphia

GOODRICH

Wireless Tires

FOR

Motor Fire Apparatus



No Delay Enroute to the Fire.
Least Vibration in the Apparatus.
Built for Heavy Service.
Safest for Firemen and Bystanders.
Three Year Guarantee.

Of course you are considering Motor Fire Apparatus. Send at once for description and prices. We can save you worry and expense.

Made by

THE B. F. GOODRICH CO.

Akron, Ohio

LARGEST IN THE WORLD

"Most Miles per Dollar"
Firestone

FIRE ALARM TELEGRAPH APPARATUS

We build apparatus best suited to the individual needs of cities or villages.

Complete systems installed or instruments furnished for extending any standard system.

STAR ELECTRIC COMPANY, BINGHAMTON, N. Y.

RUBBER-LINED COTTON FIRE HOSE

EUREKA, 4 ply PARAGON, 3 ply RED CROSS, 2 ply

Always gives satisfaction. Send for catalog

Eureka Fire Hose Manufacturing Co.

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Columbus, Ohio; Atlanta, Ga.; Dallas, Texas; Minneapolis, Minn.;
Denver, Colo.; Seattle, Wash.; Syracuse, N. Y.; Detroit, Mich.;
Omaha, Nebr.; San Francisco, Calif.

Why not equip your car *now* for months of economical tire service?

You will find that tires made as

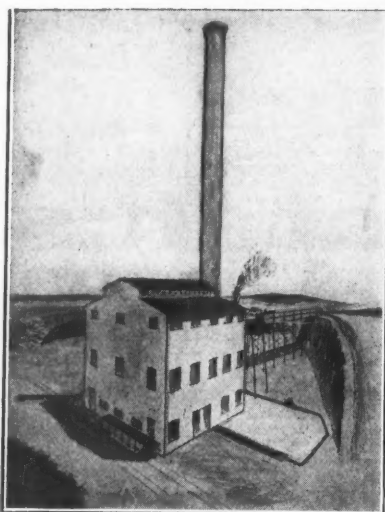
UNITED STATES TIRES

are made will give you the *long-lived road service* you have a right to expect from your tires.

WHY NOT TRY THEM?

United States Tire Company
NEW YORK

Dealers Everywhere



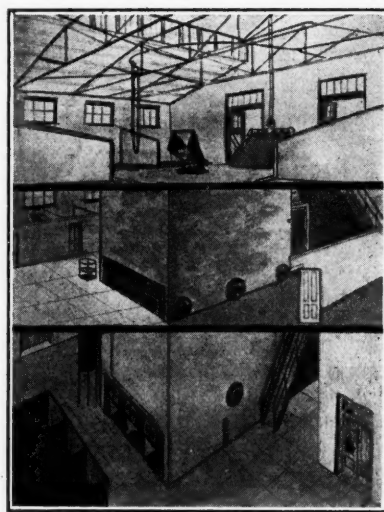
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Make Power from Waste and Garbage

Harris Municipal Garbage Incinerator and Steam Generator.

IS A POWER PLANT

It will burn all city refuse, including dead animals; filter privy vault cleanings, slop and slush, evaporate liquids therefrom into sterile steam, burning the solids.



Interior.

ODORLESS AND SMOKELESS

A plant of this kind in any town or city will pay its operative expenses and a good dividend on the investment, and do more as a prophylactic of Tuberculosis and Typhoid Fever than all other means combined have ever done.

WANTED: CONTRACTING ENGINEERS TO BUILD ON ROYALTY IN EXCLUSIVE TERRITORY

NASHVILLE BRIDGE CO.

CONTRACTING-ERECTING ENGINEERS
FOR

The Harris Municipal Garbage Incinerators

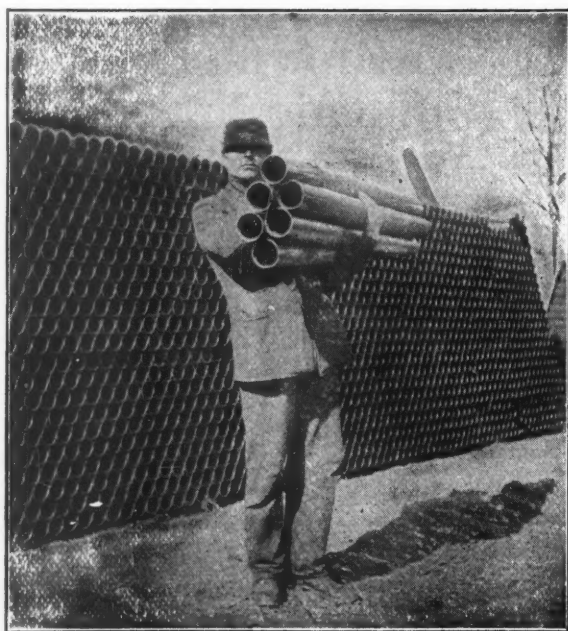
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INVENTOR, PATENTEE AND OWNER

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Carrying 30-feet 3-inch Socket Joint Conduit

Orangeburg Fibre Conduit

("Admitted to be the best Fibre Conduit.")

Made in four styles of joints—Socket, Sleeve, Screw and Harrington, with bends and fittings for same. Is the lightest conduit made and means low freight and cartage costs.

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No Moving Parts

**American and Canadian Commercial
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successors to
**THE SIEBEN SYSTEM OF SANITATION
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OF
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Sewer
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A postal will bring complete
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vestigate the workings of a real sewer cleaning
system that eliminates all vegetable and foreign
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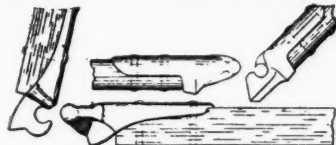
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Three-ft. Rods, 55c. each. Four-ft. Rods, 65c. each.
THE F. BISSELL COMPANY, TOLEDO, OHIO

The only Rods that
joint and unjoint
easily and quickly
and cannot buckle in
the duct.
Light weight, long
runs easily handled,
no slack and lend
themselves to all
practicable bends.

SEWER RODS The Big Strong Kind



Strong all ways—no weak
way like Others.

We pay the freight and ship
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**W. H. STEWART, 1614 Locust St.
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Investigate Stewart's Sewer Cleaning Machine

Heenan Destructors

Sanitary and Economical Disposal of City Refuse
by most advanced European Method.

The Destructor Co., 111 Broadway, N. Y.

Controlling all U. S. patents and rights of
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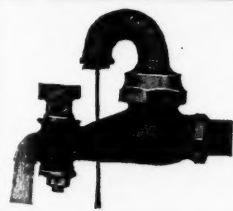
Improved modern method of disposal of refuse for
Towns, Hospitals, Hotels, Dwellings and Business
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SOLE OWNERS OF THE MORSE PATENTS.



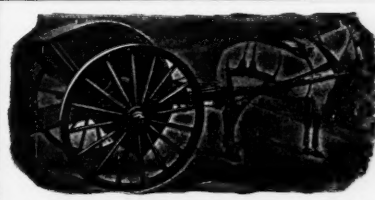
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regulates the supply to the tank

PAYS FOR ITSELF IN ONE YEAR

By its use one city with 23 tanks saves
62,000,000 gallons.
Let us send you one on 30 days' trial.

Modern Iron Works, Quincy, Illinois



SANITARY CARTS

(Patented)

for Garbage, Night Soil,
Material from Sewers,
Inlets, Etc.

Made for 1 or 2 horses

Write for Catalogue

Geo. H. Holzbog & Bro.
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AUTOMATIC SWILL CART

Dumps at the end. Bodies made of steel, absolutely water
tight. Fan tail discharges load in hopper or conveyor.



Built in 2, 3 and 4-hus-
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also make Dump Wagons
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is the composite result of all the latest
improved devices used to destroy gar-
bage, rubbish, refuse and dead animals.

It combines an incinerator
for primal combustion—An
evaporating pan for the dis-
integration of liquid—An
auxiliary gas consuming fur-
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All combining to abso-
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terial with the least
amount of fuel, with en-
tire absence of odor, and
in the least possible time.

The cost of incineration by
the DECARIE SYSTEM is
from 50% to 75% less than
any other method.

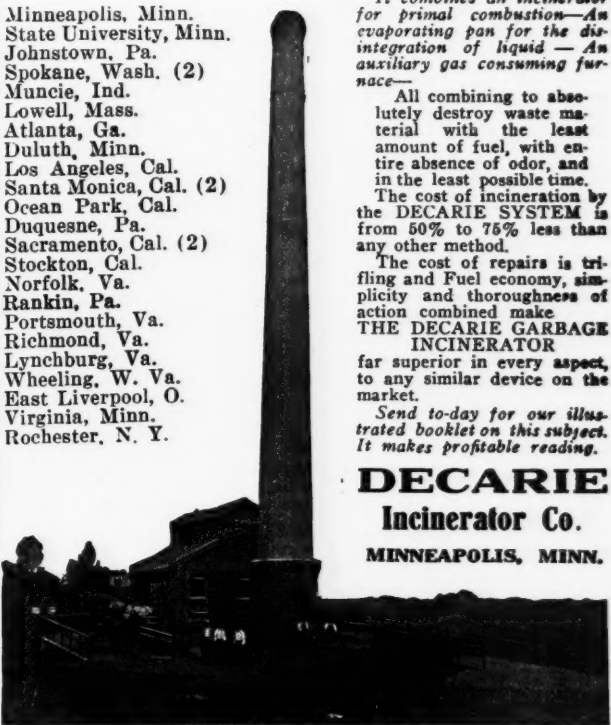
The cost of repairs is trif-
ling and Fuel economy, sim-
plicity and thoroughness of
action combined make
THE DECARIE GARBAGE
INCINERATOR

far superior in every aspect,
to any similar device on the
market.

Send to-day for our illus-
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It makes profitable reading.

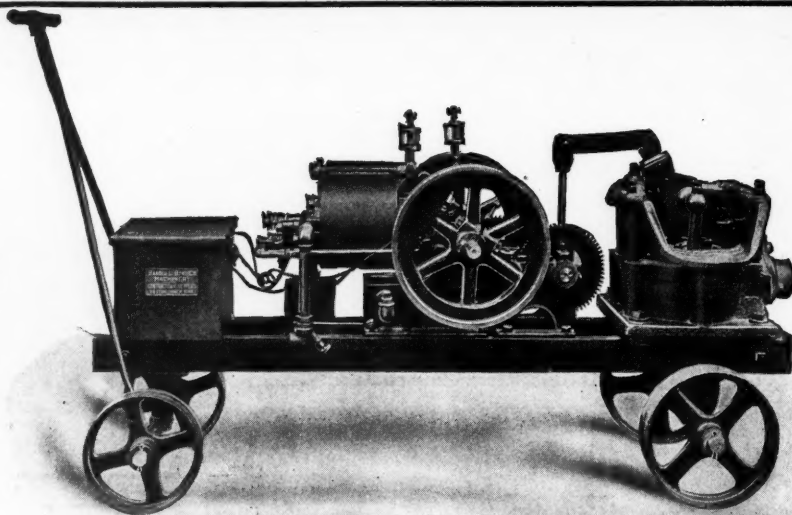
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MINNEAPOLIS, MINN.



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**We Invite Contractors
To Compare the
Atlantic Diaphragm
Pumping Engine with
Any Others on the
Market**



Note the appearance and style of the Atlantic Engine in comparison with the clumsy ungainly appearance, light mounting and weak connections of most other makes; see the stalwart construction and correct design of the Atlantic, giving it great durability and the ability to stand up on the job, night and day.

B. F. Meeks Construction Co., Kingstree, S. C., started on Atlantic Engine at 7 A. M., April 25, 1912, and it had been running night and day without stopping when we wrote this advertisement, a month later.

No other diaphragm engine offers such stability, that is designed and built to work so continuously without stopping on only 1 pint of fuel for each hour and that does as much work or more work than two hand pumps run by 4 to 8 men!

Before buying call or write for facts, not imaginary achievements.

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383 R Atlantic Avenue, BOSTON, MASS.

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**Collapsible
Steel Forms
for**

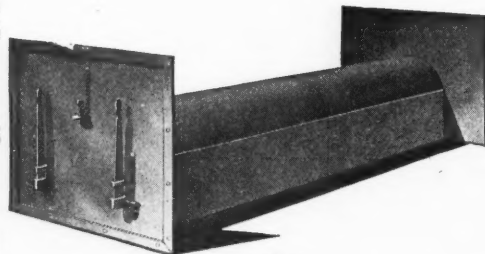
**Concrete
Culverts and Sewers**

Mean a saving of 30% in cost of Construction.
Forms are easily set up—Quickly taken down.

Better—Neater—and Stronger Culverts
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has been successfully accomplished for eight years with the

Hampton Sedimentation Tank

It is odorless and continuous in operation, and its effluent carries the minimum of suspended solids.

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Sole agents in the United States

**FOR FILTRATION PLANTS
SULPHATE ALUMINA**

A SPECIALTY

Cochrane Chemical Co., 40 Central St., Boston

CHLORIDE OF LIME

FOR PURIFYING WATER

PENNSYLVANIA SALT MFG. CO.

115 Chestnut Street, Philadelphia, Pa., U. S. A.

**BLEACH FEEDING APPARATUS
For Purification Plants**

Non-corrosive orifice boxes and float valves. Orifices adjustable.
Operation data furnished.

WALLACE & TIERNAN

136 Liberty St.

New York City

A Radical Departure From All Old Styles Standard Sapphire Frost-Proof Meters

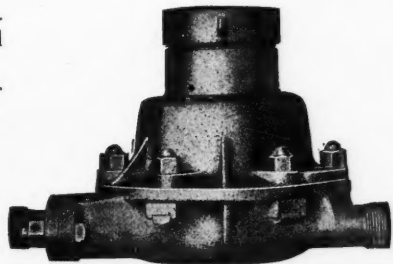
Cannot be stopped up.

Hot water or excessive heat will not affect them.

Built like a watch. Jeweled Bearings. Water Meter Co.

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STANDARD "SAPPHIRE" METER

AMERICAN and NEW NIAGARA WATER METERS



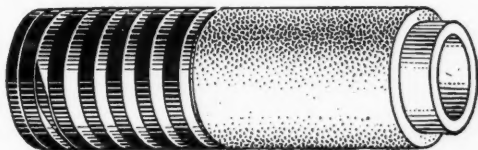
Jewel Bearing Intermediate Gears
Self Cleaning and Sanitary
Adjustment for Pressure
Extra Thick, Strong Disc
Fewest Parts

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MACHINE MADE WOOD PIPE

For durability and economy get in touch with our Wood Pipe before preparing your specifications either for your municipal lines, mine lines, supply mains. Write for catalogue and particulars.



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BADGER METER MANUFACTURING COMPANY



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Of the West

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MANHOLE AND SEWER CASTINGS

Prompt Deliveries

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Works:
TRENTON, N. J.

TWELVE REASONS WHY YOU SHOULD USE "LEADITE" FOR JOINTING WATER MAINS

- 1-DURABILITY. Leadite joints increase in strength with age.
- 2-NO CAULKING. Leadite joints require no caulking, because the Leadite adheres to the pipe, making a water-tight bond.
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- 6-TOOLS. As no caulking is required fewer tools are needed.
- 7-TRANSPORTATION. Considerable freight charges are saved because Leadite is lighter than lead.
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- 10-DELIVERY. We can make prompt shipments.
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THE LEADITE COMPANY, Inc., Land Title Bldg.

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Photo-recording Pitometers

Pump Slip Indicators

WATER WASTE INVESTIGATIONS MADE

WATER "WATCH DOG" METER

RELIABLE AS ITS NAME

Manufactured by the

GAMON METER COMPANY

NEWARK, NEW JERSEY

EFFICIENCY In Water Meters

MEANS JUST THIS:

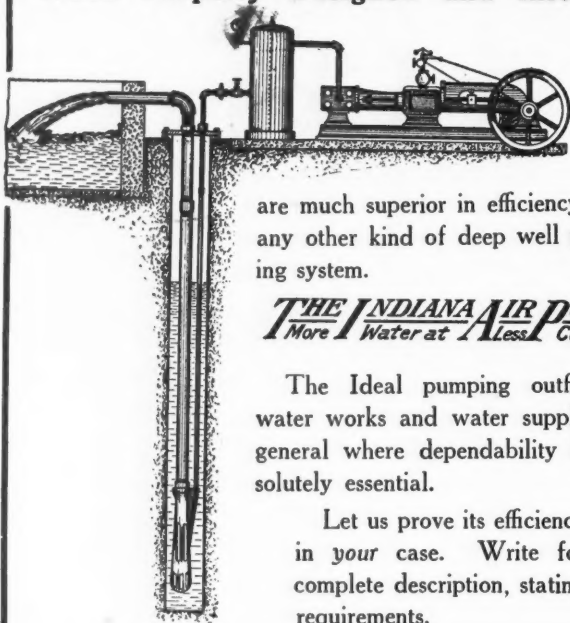
Accuracy, uninterrupted service, without frequent and expensive repairs and the application of the right principles of construction and operation to specific needs.

Let us tell you something of the efficiency of our Water Meters and the various types which we manufacture.

UNION WATER METER COMPANY
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Air Lift Pumps

When Properly Designed and Installed



are much superior in efficiency over any other kind of deep well pumping system.

THE INDIANA AIR PUMP
More Water at Less Cost

The Ideal pumping outfit for water works and water supplies in general where dependability is absolutely essential.

Let us prove its efficiency in your case. Write for complete description, stating requirements.

Indiana Air Pump Co.

General Offices—Indiana Pythian Building
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**WHENEVER THE COST OF FUEL
FOR PUMPING ONE MILLION
GALLONS OF WATER ONE
FOOT HIGH EXCEEDS
2½ CENTS**

the installation of a crank and flywheel type pumping engine to replace your present equipment should be given serious consideration.

We shall be glad to send you facts and figures showing the saving that can be made in your plant by such a change if you will advise us regarding existing conditions.

Allis-Chalmers Pumping Engines hold the World's Record for economy as shown by official duty tests and annual station operating costs.

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Milwaukee, Wis.

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Darnell says:—

Mr. J. L. Darnell, former city engineer of Kansas City, recently called upon as an expert witness by the Public Improvements Committee during their investigation of materials for sewer pipe, said:

"I made a very thorough investigation of the relative merits of the two pipes, and, as a result of that investigation, I was inclined to stick to vitrified clay pipe for the smaller sizes of sewers—for two reasons."

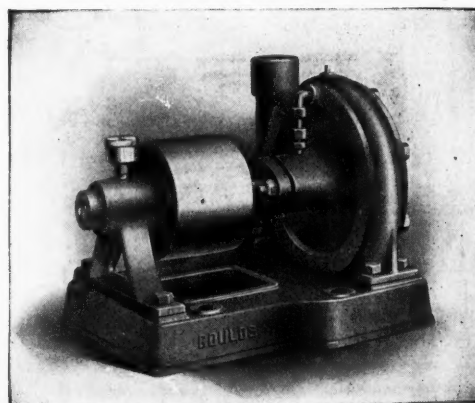
YOU will be interested to know what those two reasons are, and all about the investigation. Write us for

"Testimony of the Expert Sanitarians."
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"Criminal Record of H₂ S"—"Sewer Facts"—all free.
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FOR EVERY SERVICE



Centrifugal Direct Connected to Electric Motor

Goulds Centrifugals

For Municipal Waterworks

are high in efficiency.

The shafts are large and bearings generously proportioned.

We are prepared to furnish Catalogs and drawings of a most complete line.

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